DOCUMENT RESUME

ED 037 055 EM 003 461

TITLE	The Use of Programed Instruction in U.S. Schools; Report of a Survey of the Use of Programed Instructional Materials in the Public Schools of the United States During the Year 1961-1962.
INSTITUTION	Columbia Univ., New York, N.Y. Inst. for Educational Technology.
SPONS AGENCY	Office of Education (DHEW), Washington, D.C.
REPORT NO	OE-34022
PUB DATE	63
CONTRACT	OEC-16-008
NOTE	83p.
AVAILABLE FROM	Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402 (FS 5.234:34022)
EDRS PRICE	EDRS Price MF-$0.50 HC Not Available from EDRS.
DESCRIPTORS	Educational Research, *Instructional Technology, *National Surveys, *Program Attitudes, *Programed Instruction, Programed Materials, Program Evaluation, Program Planning

ABSTRACT

The second half of a two part survey dealing with available programed instructional materials, and the use of these materials in schools is reported in this volume. The information will assist the potential user of programed materials in handling the parameters with which he is most apt to be concerned: cost, size of experimental population, most frequent methods of use, decisions involved, and the reactions of teachers, administrators, boards of education, parents and students to early experimentation in the schools. The problems, advantages and attitudes occurring at the early stage of the use of programed instruction are discussed. Appendices include the questionnaire used in the survey (along with the response percentages) and several data tables. (JY)

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OE-34022

The Use of Programed Instruction in U.S. Schools

Report of a Survey of the Use of Programed Instructional Materials

In the Public Schools of the United States During the Year 1961-62

Compiled and Produced by
Research Division
THE CENTER FOR PROGRAMED INSTRUCTION, INC.
in cooperation with the
U.S. DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE
Office of Education

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This survey and report were made by
The Center for Programed Instruction, Inc.
365 West End Avenue
New York 24, New York

Pursuant to a contract with the Office of Education
U.S. Department of Health, Education, and Welfare
National Defense Education Act, Title VII, Part B
OE–16–008

Superintendent of Documents Catalog No. FS 5.234: 34022

U.S. GOVERNMENT PRINTING OFFICE
WASHINGTON: 1963

For sale by the Superintendent of Documents, U.S. Government
Printing Office, Washington 25, D.C.
Price 35 cents

PREFACE

As a primary source of information to educators contemplating the use of programs of instruction, the U.S. Office of Education asked the Center for Programed Instruction, Inc. to conduct this *Survey of the Use of Programed Instructional Materials in the Public Schools in the United States During the year 1961-1962.* A committee of educators, whose schools have experimented with programed instruction, assisted in determining the information which would be most useful to schools contemplating the use of programs at this early stage of the rapidly developing field. The committee consists of: J. Bernard Everett, Assistant Superintendent for Instruction, Newton, Massachusetts*; Henry Brickell, Assistant Superintendent, Manhasset Public Schools, Manhasset, New York; George Fernandez, Board of Cooperative Educational Services of Ulster County, New Paltz, New York; Joseph O. Loretan, Associate Superintendent, Board of Education, New York City; Lloid Jones, Director of Instruction, Denver Public Schools, Denver, Colorado; Ernest Weinrich, Board of Cooperative Educational Services, Huntington, New York; and Reginald Neuwien, Director, Administrative Research Department, Educational Research Council, Greater Cleveland, Ohio.

Appreciation is herewith extended to these and the several thousand other busy educators whose data constitute the basis for this report.

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* Now on leave of absence in Afghanistan

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INTRODUCTION

This volume contains the results of the second half of the two part survey dealing with (1) available programed instructional materials, and (2) the use of these materials in schools. As with Part One this survey has been carried out by the Center for Programed Instruction, Inc., under contract from the U.S. Office of Education.

Original publication plans called for a single volume with its two sections so arranged and cross-indexed that the reader might look up programs in the first section, and find publisher-supplied information (including preliminary testing results); in the second section the reader would be able to find information on how such programs are being used in schools, along with the reactions of teachers, administrators, students, etc., to these materials.

However, as a result of an increasing demand from educators for a reliable list of programs, the decision was made to issue the information from publishers immediately so that it might serve as a guide to schools purchasing materials for use during the 1962-1963 school year. Therefore, Programs, '62 contains the information received from publishers in February on programs which these publishers have acknowledged they will be able to supply to schools by September, 1962. Programs, '62 was published in the spring of 1962 by the U.S. Office of Education and is available through the Superintendent of Documents as OE-34015 for $1.50.

The second or "user" part of this guide makes up the present volume and will hopefully assist the potential user of programed materials in handling the parameters with which he is most apt to be concerned: cost, size of experimental population, most frequent methods of use, decisions involved, and above all the reactions of teachers, administrators, boards of education, parents, and even students to this early experimentation in the schools. This report is an attempt to assay the problems, advantages, and attitudes occurring in this very early period in the use of programed instruction. As such it is, of course, a survey of a very immature and experimental field; the first publishers into this market have borne a great deal of the brunt of these early trials, as well as whatever financial advantages there may have been. It is safe to say that no one in the field of programing considers any present program "good" because most of us are beginning to be aware of the potential quality and improvements that will come. This volume may provide the potential user a picture which will encourage further experimentation, and may even provide specific details around which or with which to frame his own experimentation. A major purpose of the survey and this report

Three questionnaires (Appendix A) were developed with the assistance of the advisory committee who had guided the selection of pertinent information to be presented in Programs '62 and whose assistance is acknowledged in the Preface of the present volume. The individual forms were tried out on school administrators and program users who were not involved in the original information compilation, and were revised in accordance with their suggestions. The results still represent something of a compromise between the volume of information desired and the likelihood of obtaining any return whatsoever from busy administrators and teachers.

The almost 15,000 U.S. school superintendents listed by the Office of Education received a covering letter and one copy each of the three questionnaires, "Non-user", "User", and "Individual Program Usage". Superintendents with little or no experience with programed instruction were asked to complete and return at least parts of the Non-user form; recipients whose systems were using programs were asked to complete the User form and have someone directly involved return a completed Individual Program Usage sheet for each program. Returns were accepted, and follow-ups were attempted, through June of this year.

Over two thousand school superintendents completed and returned one or more of the forms sent them. While it is probably not safe to make assumptions as to the completeness of the sample involved, or its representative nature (schools least involved in programed instruction would have a tendency not to respond), the present sampling is nevertheless presented to supply the sort of information regularly requested by school systems, i.e., "What is being done in schools around the country?" This report is presented not as an accurate picture of all ways that programs have been used, nor as a complete sampling of subject matter or location of program use. The diversity of the histories sampled, however, should be sufficient to provide perspective and even encouragement for other school administrators interested in using programed materials.

Geographically, the sample seems reasonably widespread; certain concentrations of program availability (and nearby assistance in getting started) are apparent in the Northeast, the Midwest, and the Southwest. While a complete geographical breakdown was not permitted in the coding and processing of this first survey, the plan is to make some provision for this aspect of usage reporting in the future. Many other refinements will be suggested to readers of the present effort; please forward all such suggestions to the Center.

The Center would like to go further and request that schools, particularly those involved in research with programs, send along any reports, even informally, that may be of assistance to others as program usage grows.

Local appreciation is due to Carol Christman, Helen Geiger and Barbara Haas of the Center staff for their considerable assistance in assembling this manuscript.

Lincoln F. Hanson

The Center for Programed Instruction, Inc.
365 West End Avenue
New York 24, N.Y.
July 1962

I

SYSTEMS USING PROGRAMED INSTRUCTIONAL MATERIALS and SYSTEMS having LITTLE or NO EXPERIENCE with PROGRAMED INSTRUCTION

GENERAL FAMILIARITY WITH THE FIELD

As an introductory item in the survey, an attempt was made to assess just how much (or little) the non-users of programed instructional materials might be acquainted with the field. To this end the initial question for this group asked three critical items designed to assist respondents in knowing how far to pursue in their responses, as well as to give us an indication of a kind of base level of sophistication of the respondents across the country. It must be supposed that an even larger proportion of the non-responding recipients are included at or below this level of knowledge.

Non-users were asked if they were familiar with terms such as Programed Instruction, Teaching Machines, Programed Learning, Automatic Teaching, etc. They were next asked whether they had ever read an article on programed instruction, and third, they were asked if they had ever seen a teaching machine. Respondents who answered "yes" to any of these three questions were asked to continue to fill out the non-user form; those who responded "no" to all three questions were asked to complete only the final (identification) section of the sheet and return it directly. The results of this "screening" trio are presented in Figure 1. Responses to a subsequent, but related, question, "Have you examined a program?" are included in this figure.

Early in the examination of the returns of the "non-users" (superintendents whose systems had used little or no programed instruction as of the date of the questionnaire early this spring), an interesting anomaly occured: 84% of the population indicated that they were familiar with the terms programed instruction, teaching machines, learning machines, etc., yet 90% had read an article about programed instruction. Whether this merely means that people took the term "familiar" in a more complete sense than intended, is hard to know; at any rate the degree of casual knowledge about programed instruction was surprisingly high in our sample. An obvious corollary, of course, is that those who did not return the questionnaires may very well constitute a significant section of the population to

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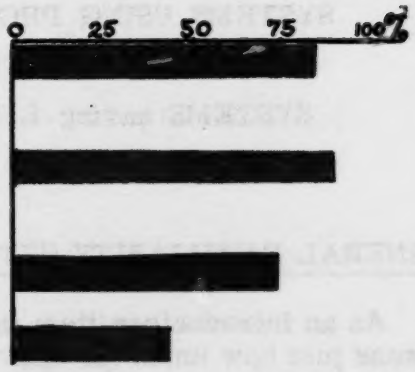
GENERAL FAMILIARITY WITH THE FIELD
(Asked only of non-users)

1. Non-Users



Familiar with terms: Programed Instruction, Teaching Machine, etc.

Read an article on Programed Instruction

Seen a teaching machine

Examined a Program

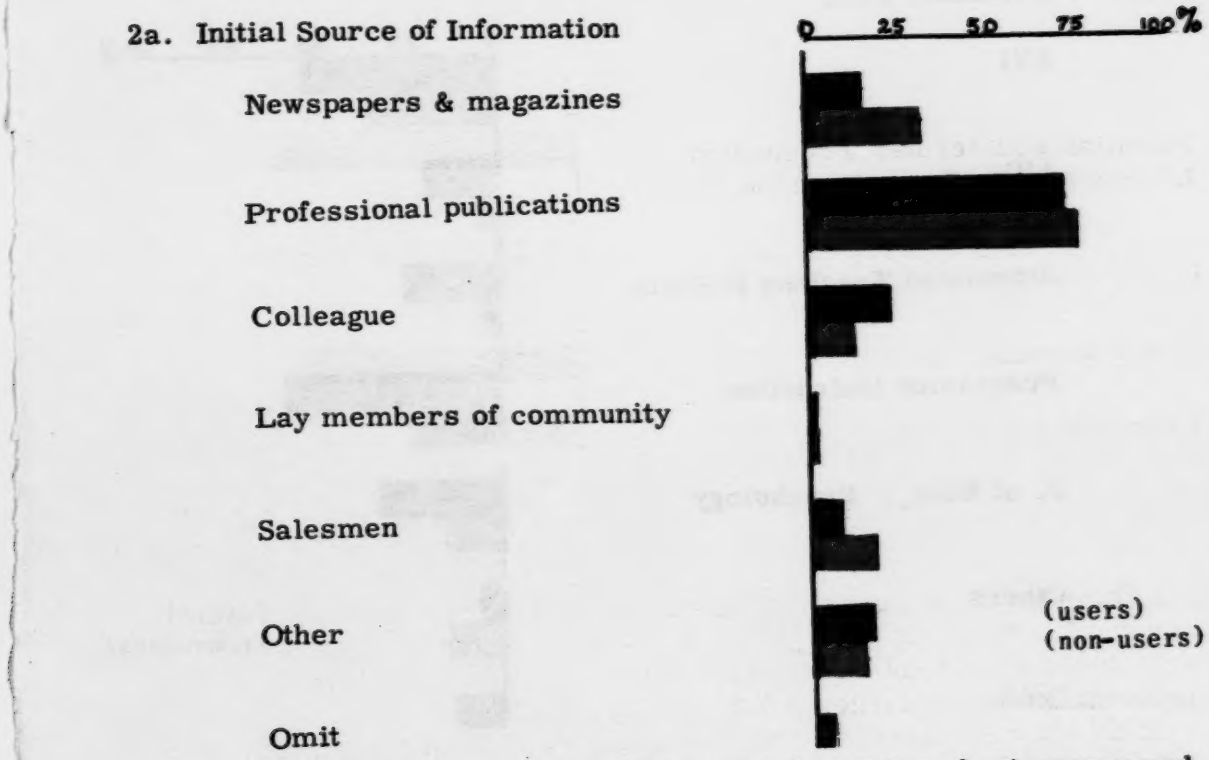
whom these terms were not familiar and who have not read about programed instruction. The percentages represented in the following pages should not be considered more than an approximate representation of the larger public school population.

In this same general information category, 73% of the population have actually seen a teaching machine (whether this means "in person" or in a photograph is difficult to say). A parenthetical point of interest to those in the field is that even though 73% of the population have seen a machine, only 44% have actually examined a program.

NOTE:
The absolute numbers of survey returns are not strictly comparable. For all intents and purposes, the proportions of each response are the comparisons which most educators will find of interest, and therefore in the discussion of the several figures that follow, "non-user" and "user" percentages will be compared without reference to the absolute "N's" involved. Many items on the questionnaire contained categories which were not mutually exclusive. Multiple categories checked obviously produce percentage totals which are sometimes well over 100.

SOURCE and EXTENT of INFORMATION

2a. Initial Source of Information



On the matter of initial sources of information about programed instruction there are reasonable parallels between the users and the non-users. Educators seem to get their information primarily from professional publications; over 70% of both groups of respondents agreed in this regard. A larger proportion of the non-users got their initial contact from newspapers and magazines—32% vs. 17%.* While the users seem to pass on information by word of mouth (almost twice as many people got their first contact from a colleague among the users as among the non-users), very small portions of each group admit to receiving their first program information from members of the lay community. Non-users got their initial information from salesmen about twice as often as the users did; miscellaneous sources were about the same in both groups.

The information on periodicals read by both users and non users reflects an arbitrary selection of publications known to include articles on or discussion of programed instruction, and therefore the miscellaneous category may in fact include journals and periodicals read to a greater degree than shown.

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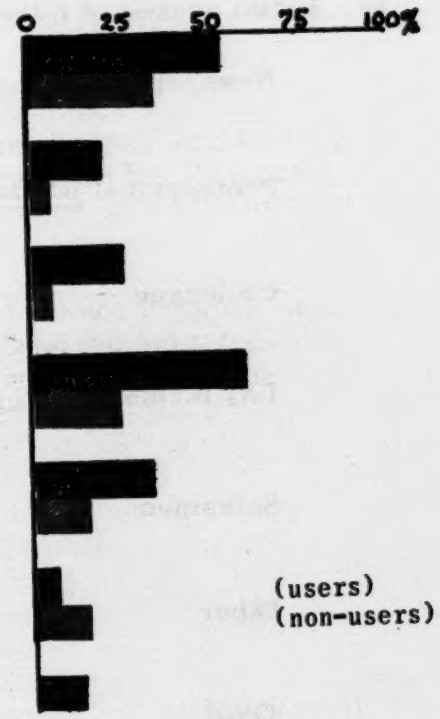
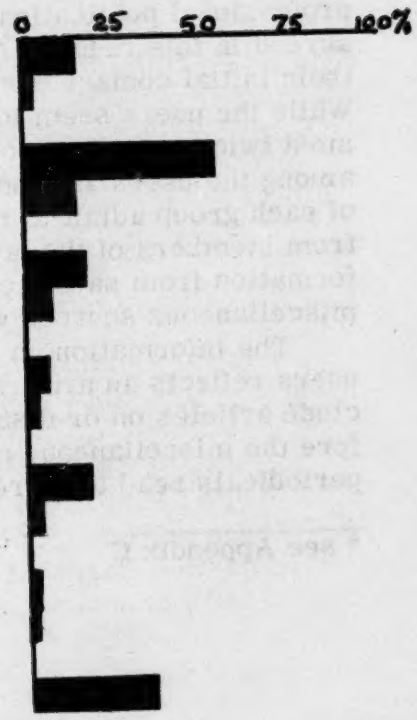
* see Appendix C

SOURCE and EXTENT of INFORMATION (continued)

2b. Periodicals Read



2c. Books Read



SOURCE and EXTENT of INFORMATION (continued)

Audio Visual Instruction is apparently read by over half of the users and at least a third of the non-users responding. AID, a publication containing general information on Automated Instructional Devices produced by INRAD, Lubbock, Texas, was read by some 20% of the users and apparently has not gotten around nearly so much to the non-users. The Rheem-Califone Automated Teaching Bulletin, now out of business but to be replaced by the Journal of Programed Instruction, was read by some 25% of the users and a small group of non-users. Programed Instruction, the bi-monthly bulletin put out by the Center for Programed Instruction under Carnegie grant, and originally sent free to all interested educators, was read by 55% of the users and only 24% of the non-users. The Journal of Educational Psychology is also read by about twice as many users (33%) as non-users (16%-17%). There is a small scattering of other periodicals containing information on programed instruction which is read by both categories.

Books read are very much a function of the time at which the questionnaire arrived and the pattern would undoubtedly have changed with the many new books which have come out since February, but as of early spring, 1962, Galanter's book on Automatic Teaching[1] (reports of an early meeting on Automated Instruction held at the University of Pennsylvania in 1958) has been read by 20% of the users and a very small percentage of non-users. Lumsdaine and Glaser's compendium[2] of early papers and reports (including some from the Galanter book) has been read by over 50% of the users and 18% of the non-users. Cram's little paperback[3] illustrating both intrinsic and linear programed instruction has been read by twice as many users as non-users; the proportions being 20% and 10%, roughly. Stolurow's Cooperative Research survey[4] was quite fresh on the market and had been read only by small numbers of both groups. The Markle et al., primer on programed

1 Galanter, Eugene (Editor). Automatic Teaching, The State of the Art, John Wiley & Sons, New York, 1959.

2 Lumsdaine, A. A. and Glaser, Robert (Editors). Teaching Machines and Programmed Learning: A Source Book, NEA Department of Audio-Visual Instruction, Washington, D.C., 1960.

3 Cram, David. Explaining Teaching Machines and Programming, Fearon Publishers, San Francisco, 1961.

4 Stolurow, Lawrence M. Teaching by Machine, OE-34010, Cooperative Research Monograph No. 6, U.S. Department of Health, Education, and Welfare, Washington 25, D.C., 1961.

instruction[5] had also been read by 20% of the users and 10% of the non-users. Once more there were a few miscellaneous books not included on our list, such as Mager's Preparing Objectives for Programmed Instruction[6] and Lysaught's Programmed Learning.[7]

DOOR to DOOR SALESMEN

A single question was included to sample user acquaintance with the phenomenon of machines being sold from door to door. Specifically, the question read, "How many parents do you know of who have bought such materials?" Of 209 respondents, eight said "none," 152 said they knew of "a handful" that had been bought, and 49 said "a considerable number" had been bought. Parents, too, are an experimenting population and are obviously trying these devices on a scattered basis. These figures indicate that home utilization of programed instruction is not overwhelmingly large. The 400,000 programs which publishers report sold to homes, while impressive as an absolute number, mean that these material have touched perhaps 1% of the nation's homes.

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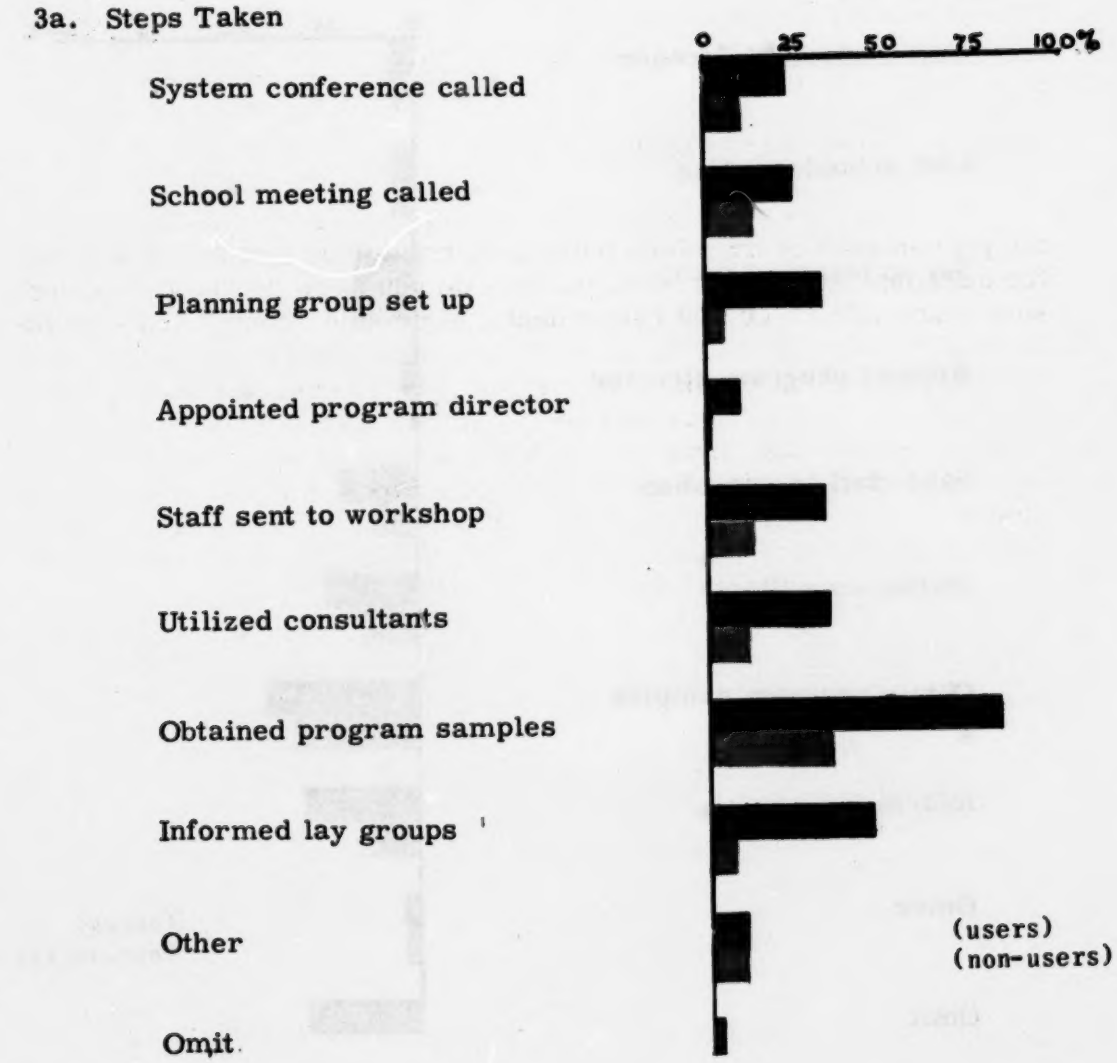
5 Markle, Susan M., Eigen, Lewis D., and Komoski, P. Kenneth. A Programed Primer on Programing, Center for Programed Instruction, Inc., New York, 1961.

6 Mager, Robert F. Preparing Objectives for Programmed Instruction, Fearon Publishers, San Francisco, 1961.

7 Lysaught, Jerome P. Programmed Learning: Evolving Principles and Industrial Applications, The Foundation for Research on Human Behavior, Ann Arbor, Mich., 1961.

STEPS TAKEN and PLANNED

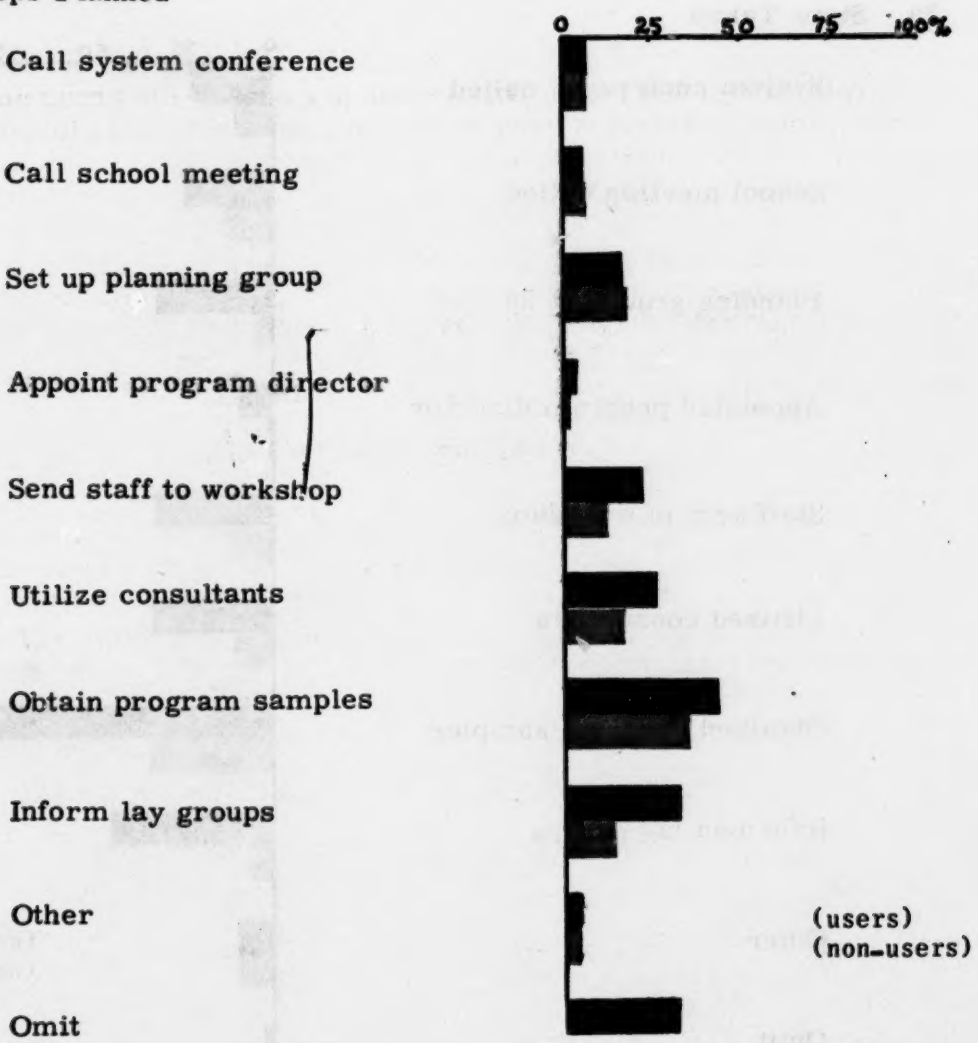
3a. Steps Taken



Of considerably greater interest to most readers in the educational field will be the matter of the steps in the use of programed instruction actually taken or planned in both non-using and using school systems. Data from these two questions are contained in Figure 3. A number of schools have called a system wide school conference, with the users exceeding the non-users by a factor of 2. In similar fashion school meetings have been called more often by users than by non-users. The non-users drop far behind in the

STEPS TAKEN and PLANNED (continued)

3b. Steps Planned



matter of establishing a planning group, indicating perhaps that one of the ways in which new media are most successfully involved in the school system occurs when a group of interested teachers are given the guidance and responsibility to do their own investigating for their own particular situation. Planning groups are apparently a useful approach in this early stage of programing; the non-using group indicated plans to establish planning groups.

A very small proportion of schools either use or plan to appoint

STEPS TAKEN and PLANNED (continued)

a program director. Sending staff to programing workshops, on the other hand, ranks about the same as planning groups with the users and again is an activity planned to be continued in the future. Those who have not yet used much programed instruction, of course, lag in both categories here. Thirty-four per cent of the group now using programed instruction have employed consultants and almost as many plan to continue the use of consultants in the future. Even of the non-users almost 12% have used consultants and 18% plan to use consultants in the future. The activity on which there appears to be the greatest agreement is obtaining samples of programs. Over 80% of the using group have obtained samples, and 43% are planning to obtain (more) samples; 35% of the group who are not using programs already have samples and plan to continue to obtain samples. The last step in program usage concerns the number of schools who have taken steps to inform lay groups, parents, etc., about programed instruction. It is reasonable to assume that this activity can be an important step in preparing the community for educational change. The replies to this question contain one of the most significant differences between the users and non-users of programed instruction. Almost half of the group who are using programed instruction have taken such steps; whereas, only 8% of the group who are not using programed instruction have taken this step in good community relations. The users' plans to inform lay groups (32%) also run well ahead of the non-using group (14%).

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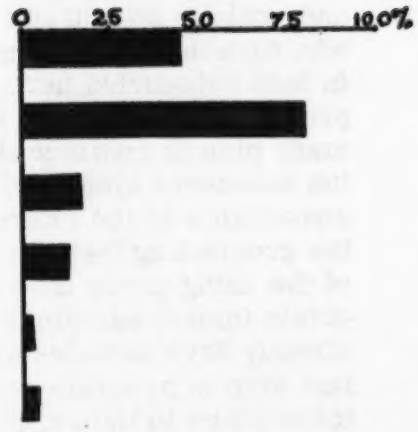
PATTERNS of USE

4a. Usage Made of Programs

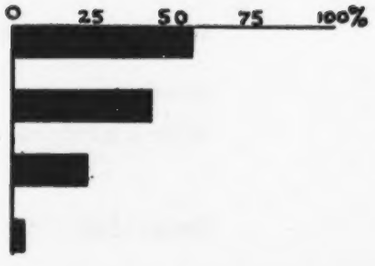


4b. Planned Usage of Programs

Forty-six per cent of the respondents have tried programs on individual students, 80% on groups of students; 31% plan to try programs on individual students, and 52% plan to work with groups. A surprisingly large number of schools (17%) are developing their own programs. The same proportion of respondents, although not in all cases the same individuals, is planning to develop local programs. A slightly smaller group (14%) is testing experimental hypotheses, a phrase which may mean a variety of things, but a reasonable number do indicate an attempt at, or at least an interest in, a rigorous approach to research. Almost 20% plan to test experimental hypotheses in future program usage.

PATTERNS of USE

4c. Programs Used



Very few (3%) of the reporting schools omitted this question on present usage; looking ahead, however, 30% of the same schools omitted any "planned usage." The distribution of the percentages in "planned use" is obviously not the same. Of those school systems now using programs either with individuals or groups 57% have said they are using programed instructional materials "on a limited trial basis." Forty-three per cent of these schools are using programed materials for regular instruction. Almost 25% indicate that they are using programs with controls and with an experimental design.[8]

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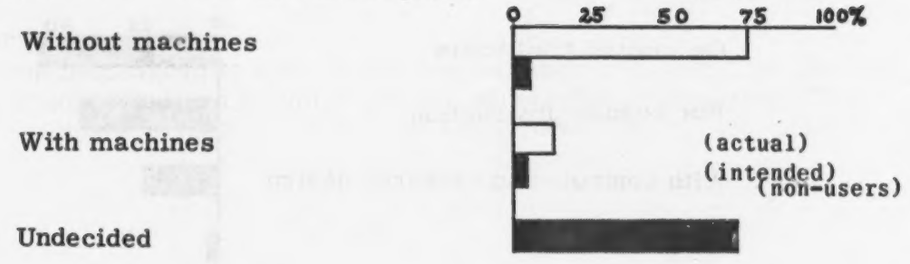
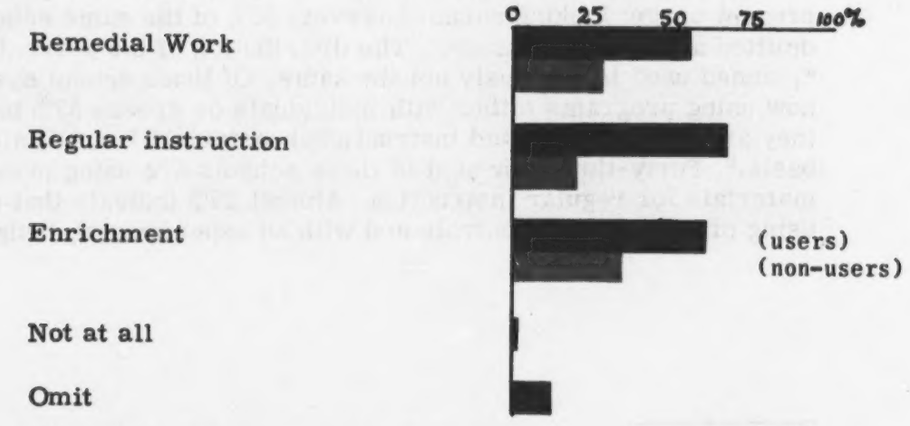
8 Programed instruction provides an unusual opportunity for learner feedback in its direct (and recordable) contact with the student. An almost unique and quite new means of manipulating variables in the instructional process is now available to assist experimentally minded educators.

INTENTS and PURPOSES

5a. Intended vs. Actual Use of Programs



5b. Purpose



While 7% plan to use programs alone, and 5% contemplate using programs in machines, 70% are presently undecided as to how they will use programs in the future. In the purposes for which they consider using programs, the non-users indicate that about 30% of them plan to use programs for remedial work; a mere 20% plan to use programs for regular instruction; and almost 35% plan to use programs for enrichment. In other words, the peripheral combination of remedial work and enrichment together consitutes the principal use that the present non-users have in mind for programed instruction.

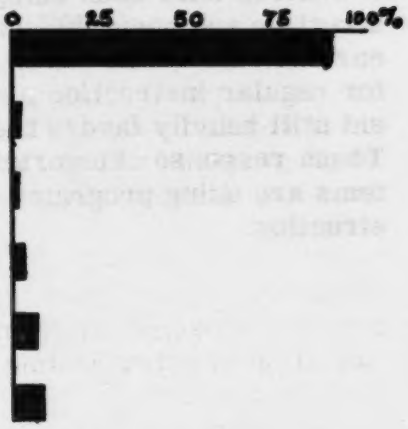
The user distribution is slightly different. While a little over half of the users have been using programs for remedial work, over

INTENTS and PURPOSES (continued)

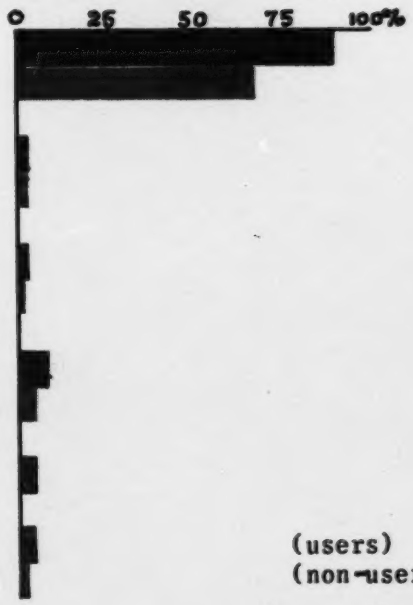
two-thirds have been using programed instruction for regular instruction and some 60% have been using programed instruction for enrichment. While the appreciation of the possibilities of programs for regular instruction may grow with use, the total pattern at present still heavily favors the peripheral uses of programed instruction. These response categories are not mutually exclusive; many systems are using programs for remedial, regular, and enrichment instruction.

FINANCING PROGRAM USE; PRESENT and PLANNED

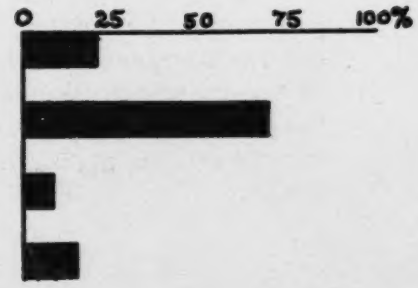
6a. Present Funding



6b. Future Funding



6c. More Than Usual Finance Problems in Future



FINANCING PROGRAM USE; PRESENT and PLANNED (continued)

Among the administrative details queried were methods of financing the use of programed instruction. Almost 90% of the users of programed instruction have operated under their regular budget and furthermore, they plan to continue using these materials within their regular budget! The total number of school systems whose use of programs has been financed with extra local, state, or federal funds, publisher support, or by any other means is still less than 25% of all of the respondents. Interestingly enough this pattern also shows in the plans of the group that has not yet used programed instruction—70% of them plan to use their regular budget to finance any future use of programed instruction, and only 12% have any expectation of extra funding from [local, state, federal, publisher or] any other source.[9]

In predicting financial problems in the future use of programs, while 21% of the using school systems reported that there would be more problems than usual, the considerable majority (70%) indicate that they do not expect more than the usual financial problems. A very small group (9%) omits this prediction, and an interestingly large proportion (16%) commented on financial problems in the use of programed instruction.

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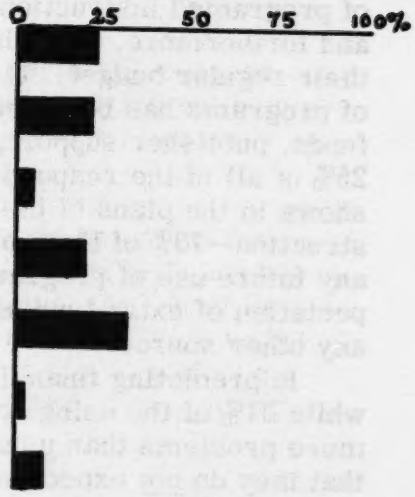
9 On this matter of other sources of income to support the use of programs, several schools wrote that they charge the student for the program and thus keep program purchases independent of their budget. While this practice enables these schools to use programs slightly more freely, it raises the question of a public school not supplying these materials without charge to all studdents.

INITIATORS

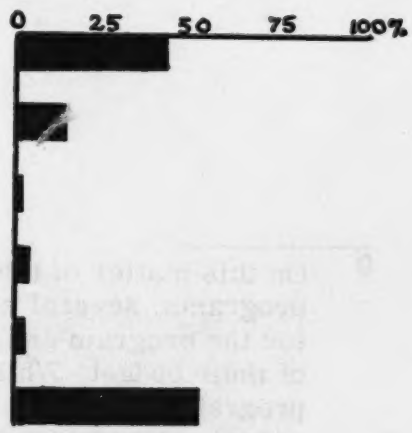
7. First Use Traceable To:



In the schools that are using programed instruction 22% acknowledge that a teacher was responsible for the first program use; the curriculum coordinator was the initiator 21% of the time; audio-visual directors, 5%; school principals, 20%; and other administrators (this usually means the superintendent or his associates) account for 32% of first use. A few systems indicate a debt to interested laymen for their initial activating force, and there is included a sprinkling of other non-administrative categories, consultants, etc.

TIME

8. Teachers Using or Developing Programs



TIME (continued)

On the matter of providing time for teachers who are using or developing programed materials, 50% of the using schools did not answer this question at all. Of those who did respond, 44% indicated that teachers were using or developing materials on their own time. This response item "on own time" in the minds of those who assembled the original questionnaire, was intended to include any time squeezed out of the school schedule; nevertheless, some 4% of the group made a specific comment to the effect that "own time" was not a proper phrase and that "school time" was an additional category (reported above!). The second response provided was "released time" which again might have conceivably taken care of the "school time." At any rate 15% of the responding users indicated that they did release time. A very, very small proportion provided paid overtime (2.4%) or paid vacation time (4.3%) for developing programs.

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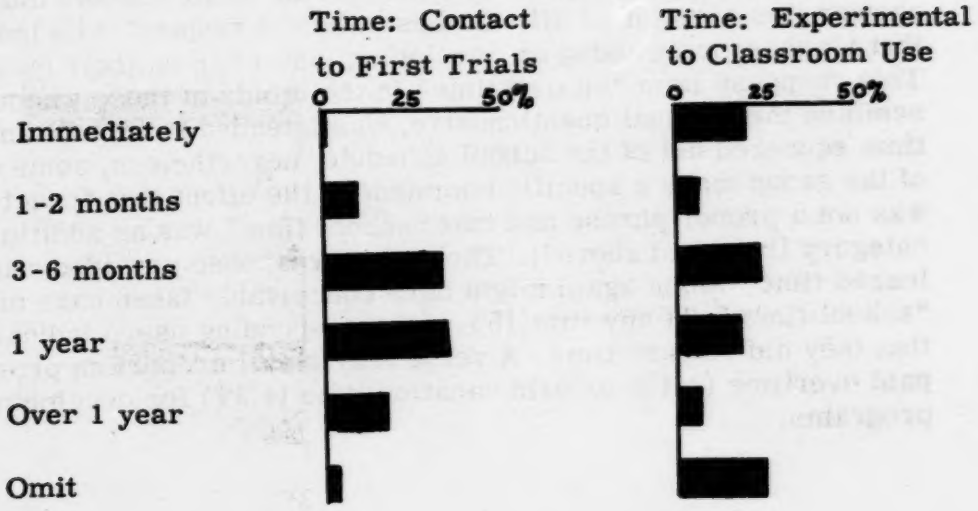
TIME LAGS

9.



How long does it take to get programed instruction into operation? Two categories were listed for the respondent schools: (1) Time from initial contact to first trials, (2) Time from experimental or initial trials to classroom use.

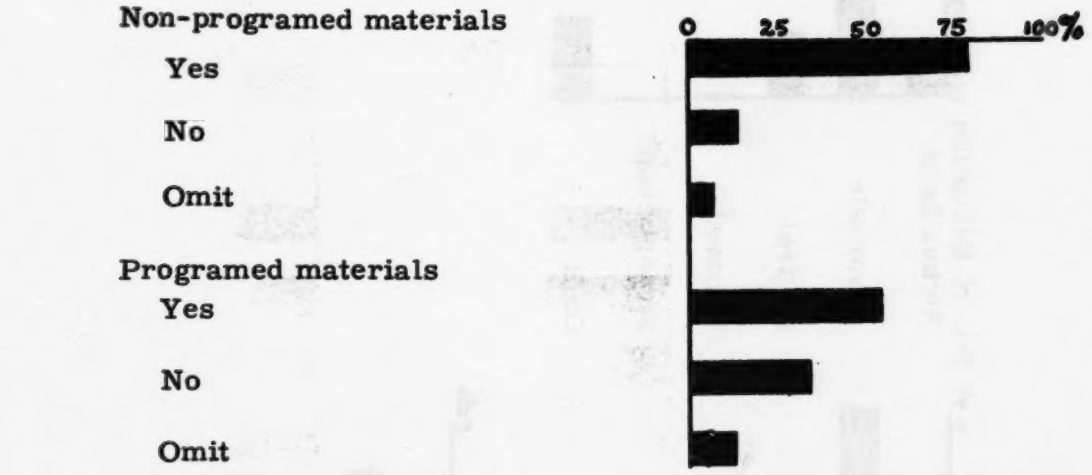
One per cent put programed instruction into trial use immediately; 10% took up to two months; 34% took three to six months; 35% took closer to a year. Those who took over a year were about 18%.

Figures for the second unit of time, from experimental to classroom use, show that a reasonable number (20%) of the respondents apparently felt free to put programed materials to use in the classroom immediately, once they had tried them out. Six per cent took less than three months in addition to the experimental use, while an additional three to six months were taken by almost 25% of the group; almost a year from the experimental use to the classroom was taken by 19%; and over a year was taken by 7%. For the considerable 25% that did not check any experimental-to-classroom-use time interval, the assumption is that this omission represents the schools who are not yet using the programs on other than a trial basis, that is, the group who have already taken their three months or a year to get into the experimental stage and who have not adopted programs for the classroom at this date.

Summing up these two time factors, it would look as though some interval between three months and a year was the modal time from initial contact to at least some classroom use.

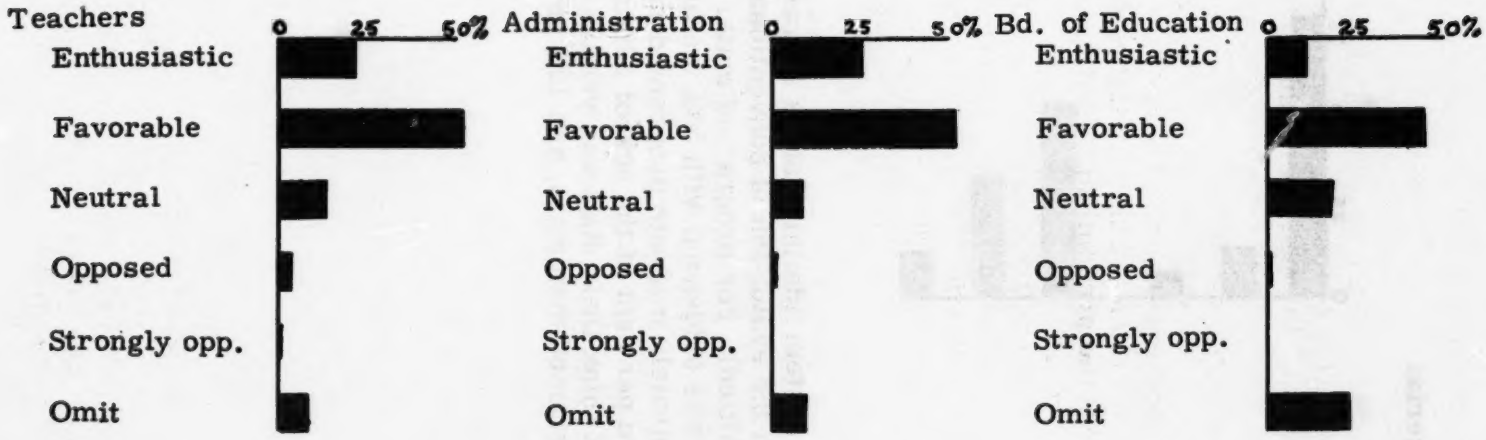
EVALUATION

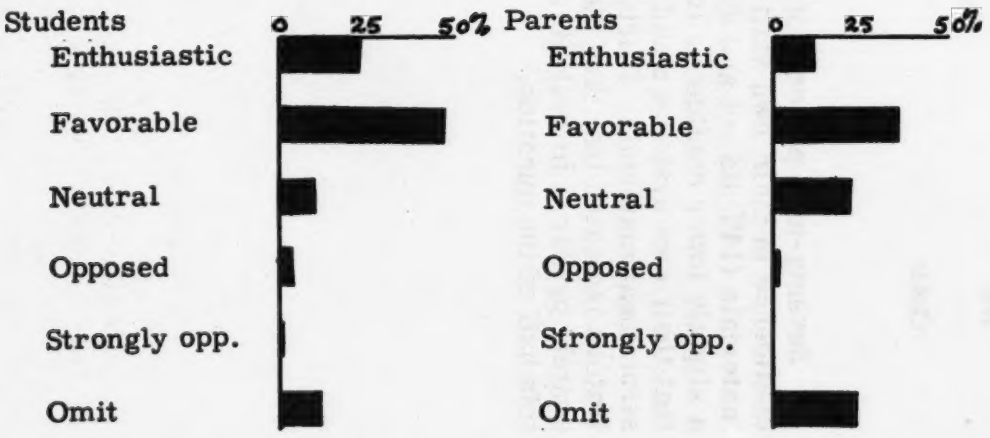
10. System Ability to Evaluate Material



Seventy-nine per cent of the system administrators expressed confidence in their own staff with the evaluation of conventional materials (14% did not and 8% omitted). For programed materials, a slightly lower confidence level was evidenced with 54% feeling that their own systems could adequately evaluate programed instructional materials. Thirty-five per cent of the school administrators indicated that they did not think their staff was yet adequately prepared to evaluate programed materials, and 12% omitted this half of the question.

11. System Reactions





SYSTEM REACTIONS (continued)

Preliminary and general evaluation by school systems using programed materials is shown in Fig. 11. Individual program usage evaluations by teachers (or more local administration) are presented later (Fig. 20). In almost all cases the present information represents the administrative evaluation of local reaction on a five-point scale ranging from "enthusiastic" through "favorable," "neutral," and "opposed," to "strongly opposed."[10] The respondents indicate a reaction from the teaching staff as "enthusiastic" in 22% of the using systems; 55% report a "favorable" reaction; 15% report "neutral"; 5% are "opposed" and one-half of 1% report a "strongly opposed" teacher reaction. (This last figure indicates that in only one school system the predominant teacher reaction was felt to be "strongly opposed").

The administration rates its own reaction as slightly more enthusiastic; almost 30% of the school systems using programed instruction report a reaction of "enthusiastic." As with the teachers, 53% report a "favorable" reaction; a small group reports "neutral," and only 1% of administrators are "opposed." For parents, a smaller population is represented; apparently fewer school systems felt that they could speak for the parents. Twelve per cent of the parent reactions are reported as "enthusiastic"; 37% are "favorable"; 23% are "neutral"; and less than 3% are "opposed."

Boards of education, also somewhat less directly involved in the problems of program usage, are reported as showing the same general pattern: 12% "enthusiastic"; 45% "favorable"; 19% "neutral"; and only one board of education reported as being "opposed." Student reactions resembled the pattern of their teachers more closely than any of the other groups: 24% "enthusiastic," 48% "favorable," 11% "neutral," 5% "opposed," and one group of students is reported as "strongly opposed," too. (This school system is not the same one in which the "strongly opposed" teacher reaction was reported). The only miscellaneous reaction reported as "strongly opposed" was a group of "college math teachers in the area."

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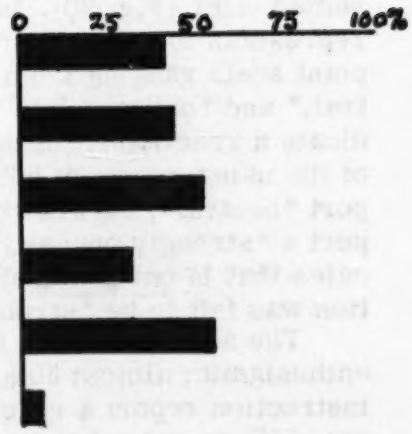
10 Where a range of reactions was checked only the average of the checked reactions was tabulated. This arbitrary technique may mean that the reader will wish to weigh the extremes more heavily than the data quoted. Specifically, for example, three systems indicated some teacher reaction as "strongly opposed." Two of these also indicated a full range of all other attitudes up through "enthusiastic." Only the one school system in which "strongly opposed" was the predominant reaction shows up in the tabulation. Only one student reaction was checked as "strongly opposed."

INFORMATION WANTED

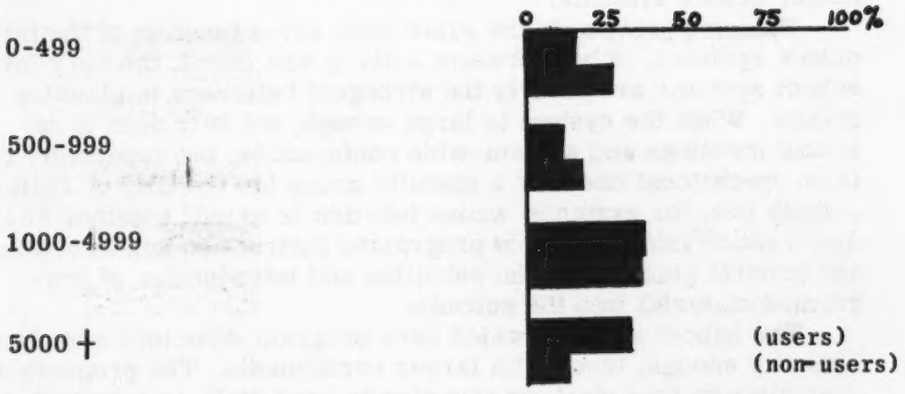
12. Using Systems Getting Insufficient Information On:



One question was asked as a guide for future publications: "Which of the following are you not getting enough information about?". Forty per cent of the respondents want more information on other school usage; 44% want information on ways of utilizing programs; over 50% of the group want information on available programs; 32% are interested in more information on the construction of programs, while 55% of the respondents indicate a lack of sufficient information about research being done in the field.

DISTRIBUTION by ENROLLMENT

13. Enrollment of Respondent School Systems



A slight differentiation in schools using and not using programed instruction turned up in the enrollment distributions of respondent school systems. While system enrollment of around 1,000-5,000 constitutes the same proportion of both non-using and using populations (37% and 38% respectively), the proportion of non using schools with less than 1,000 enrollment totals 42% of the responding group, whereas in the using population 32% of the responding schools are over 5,000 in size.

For every responding school or system with an enrollment of 500-1,000 students there were two schools under 500, there were four schools or systems with 1,000-5,000 students, and there were three schools or systems with more than 5,000 enrolled. In other words, in the ratio of 2:1:4:3, the increasing size school systems may be evaluated against one another in terms of proportionate response. For example, on the matter of having a system-wide conference, it is quite clear that the proportion of schools in the 1,000-5,000 class who have called a system-wide conference on programed instruction is greater than in any other single enrollment category of schools. A brief discussion of the data on size of school (or system enrollment) may assist the reader in selecting appropriate action for his own school system. For a second example, in meetings within schools this same category of 1,000-5,000 size schools has the largest absolute number of responses checked, but the proportion by enrollment ratio is not as great as in the schools of over 5,000. Perhaps all three of these figures indicate that when school systems grow large enough, system conferences and school

meetings are not only more necessary, they are called! On the other hand, the smaller enrollment categories indicate that they plan to have school meetings in greater proportion than do the larger school systems.

Planning groups, in the same vein, are a function of the larger school systems, in both present activity and intent; the very largest school systems are clearly the strongest believers in planning groups. When the system is large enough, not only does it use school meetings and system-wide conferences, but apparently there is an operational need for a specific group (as the City of Philadelphia has, for example) whose function is to pull together and disseminate information on programed instruction and to obtain and provide guidance in the selection and introduction of programed material into the schools.

The school systems which have program directors are also, logically enough, those with larger enrollments. The proportion of systems who sent staff, or who plan to send staff, to a workshop follows the 2:1:4:3 ratio almost perfectly. In other words, the value of sending staff to workshops is appreciated and planned in direct proportion to the number and size of schools represented in the survey. In similar fashion samples have been and will be obtained across the board. Consultants are used and planned much more at the 5,000+ enrollment level, which makes sense financially, if no other way. The larger systems feel they can afford (or feel that they cannot afford not) to have a consultant to assist with their selection and early use of programed instructional materials.

One of the more interesting breakdowns turns up in the matter of informing lay groups (parents, etc.) about this new activity and taking steps to keep them up to date. This activity exists and is planned in almost exact proportion to the size of the enrollment of the responding schools, as represented in the survey and while these figures are not large, their distribution suggests a widespread appreciation of the importance of keeping in touch with lay groups, regardless of school or system size.

The largest school systems seem to put teachers on their "own time" considerably more than the smaller ones. Whether teachers' "own time" means fewer contact hours but more administrative duties or whether there is more true free time provided by the larger schools for program implementation and development is hard to determine. Certainly this is an optimistic explanation for the dominance of the large school systems in this category.

In released time the schools follow the enrollment proportions represented in our sample very closely. Paid overtime and paid

vacations seem to be a luxury only the larger school systems feel they can afford.[11]

The first use of programed materials in the very small school systems is traceable largely to a teacher. In the 1,000-5,000 pupil systems also, teachers seem to have an influence in introducing materials. In relatively few of the larger schools does this influence hold. The balance comes in two alternative categories; the curriculum coordinator and the audio-visual director now more than carry their weight in introducing programed instruction. In larger schools these two roles dominate in introducing programed material, but one must remember that schools under 500, for example, probably have no separately designated curriculum coordinator or audio-visual director.

Perhaps again reflecting the changing influence of the individual, the principal himself in the smaller school systems is apt to be the one to introduce programed instruction, whereas the proportion of principals who have introduced programed materials into larger school systems, and particularly in the largest category, occurs less frequently. There is consistency in this change of the principal's role in more formalized administrations; some "other administrator" (often the superintendent) was also responsible for the introduction of programed instruction in a greater proportion in the smaller school systems than in the larger ones. Laymen were instrumental in introducing programed instruction only in school systems of 1,000 or more pupils. This figure is consistent with Brickell's report.[12] Specific instructional innovations are rarely demanded or effected by the public or the board of education, but the demand for an improved outcome is an important concern of the board, and ultimately the lay public. Increasing public awareness of programing potential is apparently a worthwhile goal. Certainly, the public is concerned with the end result of introducing programed materials while the teacher and administrator are more immediately concerned with the details of the innovation process.

The reactions of using systems, by enrollment, are given in Appendix B, Table II. In the smaller schools, the enthusiasm runs higher than the enrollment ratio (2:1:4:3), while the opposition quite clearly shows up only in the larger school systems—no matter which the group reacting.

11 It is interesting that the category not provided for, "school" or "regular" time, assumed to have been covered under "own time" or "released time" was frequently written in as an extra response category. The validity of this response as a real omission is supported by a proportionate representation in each category of school size.

12 Brickell, Henry M. Organizing New York State for Educational Change, State Education Department, Albany, New York, 1961.

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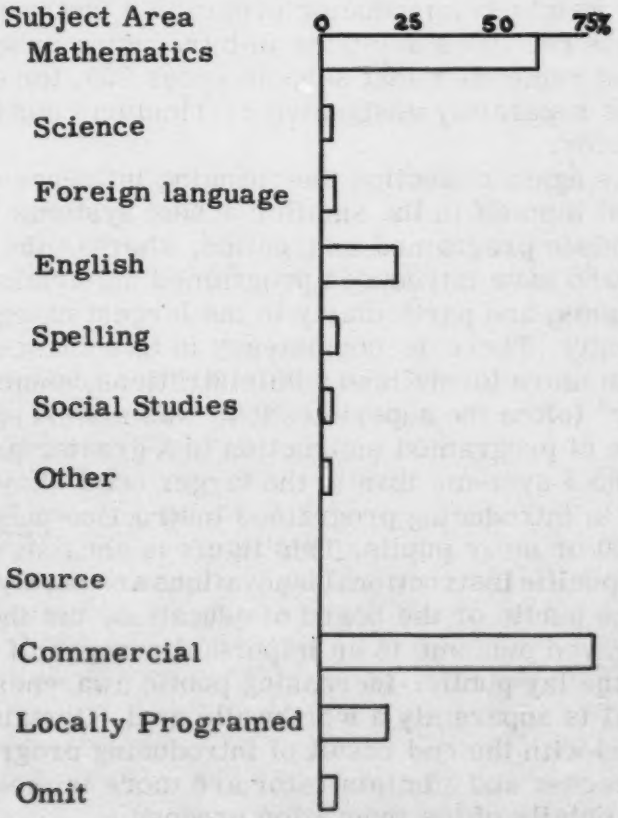
II

INDIVIDUAL PROGRAM USAGE

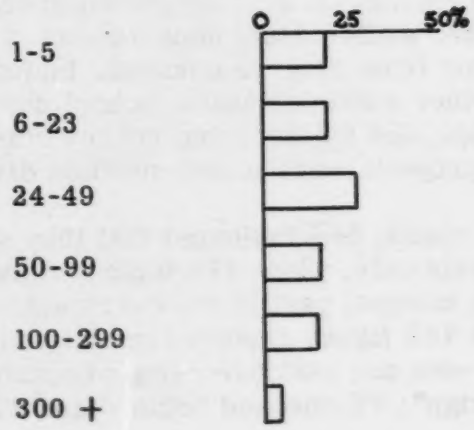
SUBJECT AREAS and PROGRAM SOURCES



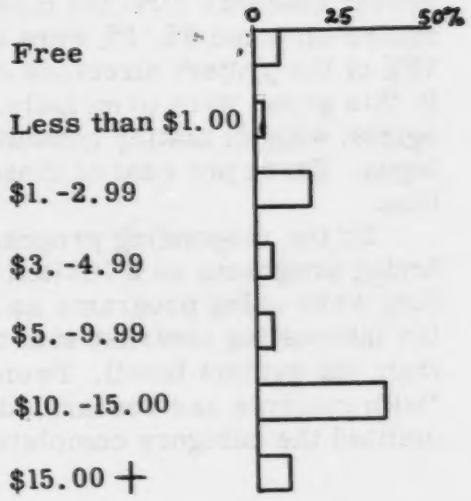
Sixty-one per cent of the schools reported program use in the area of mathematics. English was the next closest response category with 21%; the remaining responses were scattered—science 3%, foreign language 4%, spelling 4%, social studies 3%, and all others 3%. Seventy-seven per cent of these programs were obtained from commercial publishers; 19% were locally programed.

NUMBER and COST of PROGRAMS USED

15. Number of Copies Used



Copy Cost



The modal category of number of programs used is between 24 and 29 copies (the category checked by 27% of the users). Eighteen per cent of the schools used less than five copies; 18% used between six and 23; above the mode, 16% used between 50 and 100 copies; 15% used between 100 and 300; and 5% used 300 or more copies.

Seven per cent of the program users obtained copies free. This figure includes early materials sent out by publishers for experimental purposes. Two per cent used programs which cost less than a dollar; 17% used programs that cost between three and five dollars; another 5% between five and ten dollars. The modal 10 to 15 dollars was spent for 37% of the programs and 9% of the respondents paid over 15 dollars per copy. Some of these "over 15 dollars" programs involved hardware, although this is hard to detect from the present survey. Four per cent of the group responding indicated that they paid more than one price per program copy, in other words, they purchased some materials at one price and other materials at a different price.

PROGRAMERS and PROJECT DIRECTORS

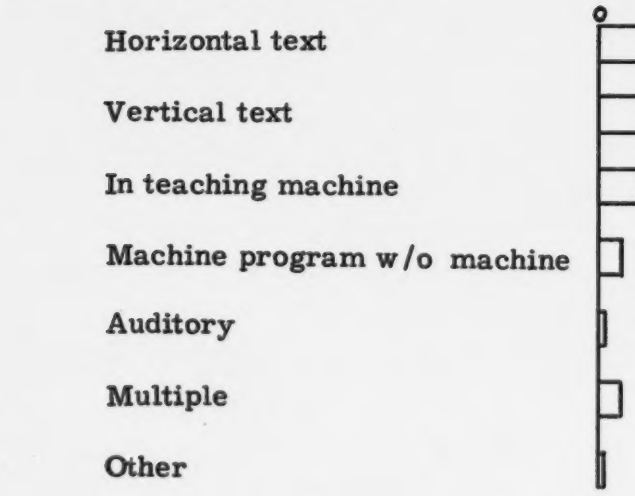
Local programing was usually done by a subject matter teacher. A few programs were written by a curriculum coordinator, and audio-visual specialist, and other miscellaneous categories.

PROGRAMERS and PROJECT DIRECTORS (continued)

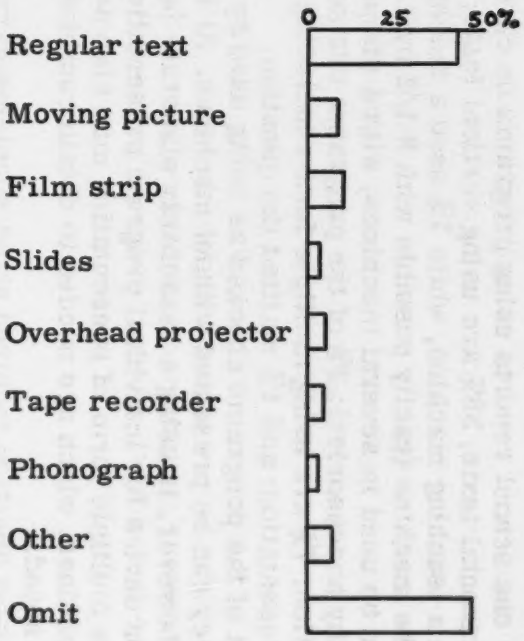
In a few cases a multiple effort was involved in the programing. Project direction shared a somewhat similar distribution: subject matter teachers directed most projects (23%), curriculum coordinators directed 9%, 1% were under audio-visual departments, and 16% of the project directors came from diverse sources. Included in this group were principals, other administrators, school psychologists, subject matter consultants, and faculty from nearby colleges. Three per cent of these projects were under multiple direction.

Of the responding program users, 54% indicated that they were trying programs on a limited basis only, while 27% indicated that they were using programs as an integral part of the curriculum (an interesting contrast with the 43% figure reported on the returns from the system level). Twenty-one per cent are using programs "with controls and research design"; 5% checked "other" and 4% omitted the category completely.

16. Form of Presentation



Supplementary Materials



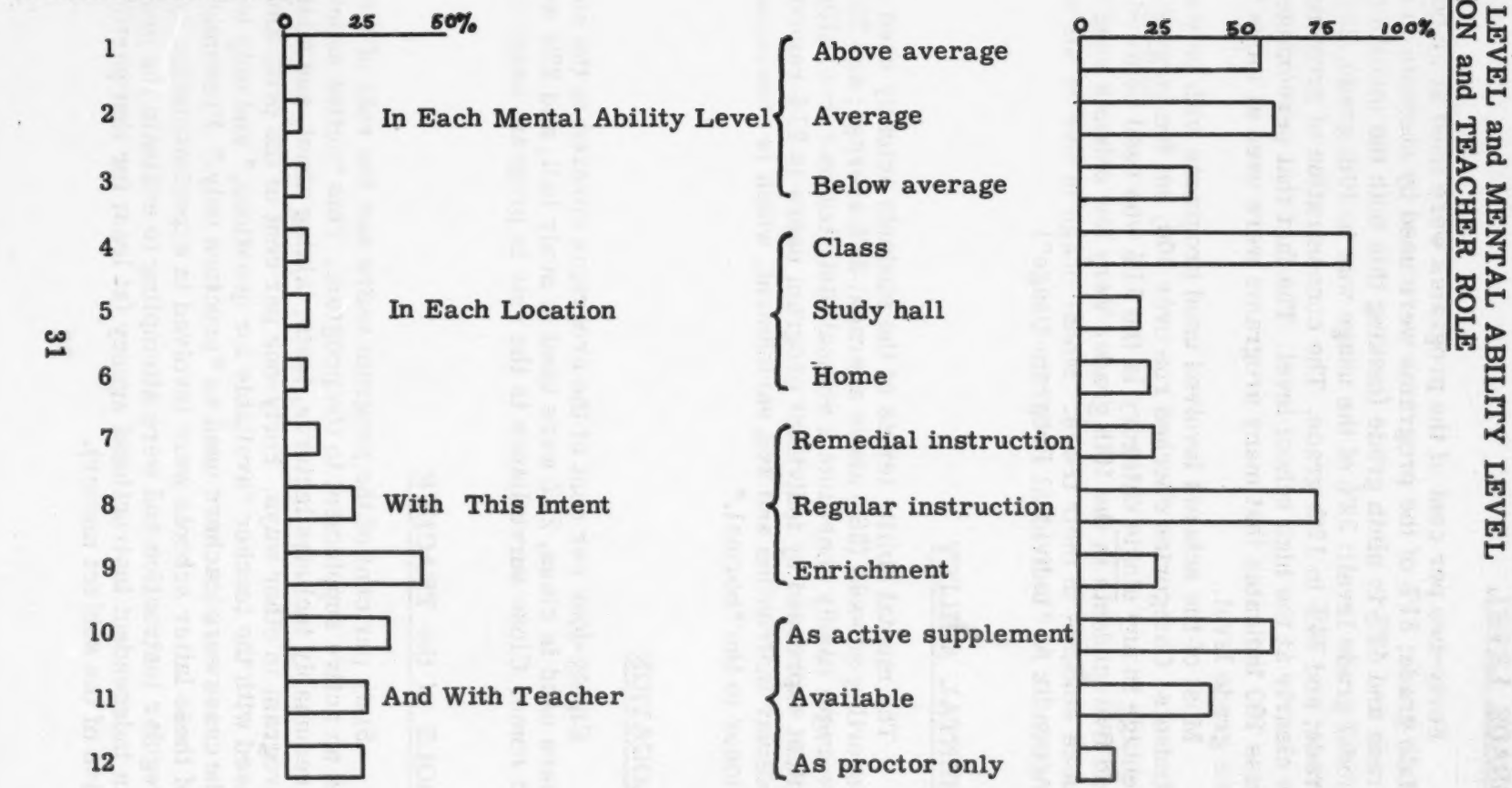
FORM of PRESENTATION; SUPPLEMENTARY MATERIALS

Only one school reports using programs on cards, 28% are using horizontal texts, 38% are using vertical texts, 12% use programs in a teaching machine, while 7% used a machine program without the machine (easily possible with 8 1/2 by 11 sheets, which can be used in several machines, with a simple mask or without any accessories); 2% of the programs use some auditory presentation; 7% are using multiple forms including audio and visual presentation; and 4% omitted the question.

Most of the programs checked as being used by respondents in this survey can be presented without machines. At least one school system, however, is using a reasonably elaborate (and expensive) projection device for individual program presentation. The 7% who indicate a multiple form of presentation may also account for some of the machines, which are needed to obtain combinations of picture and sound.

The next question inquired about supplementary materials used simultaneously with programs. Forty-five per cent used no supplementary materials; 43% used a regular text along with the programed material. Motion pictures, film strips, slides, overhead projector, tape recorders, and phonographs total to less than 40% of the responses on supplementary material used, and many of those were used by the same person.

17. Program Use



GRADE LEVEL and MENTAL ABILITY LEVEL
LOCATION and TEACHER ROLE

GRADE LEVEL

Forty-two per cent of the programs were used at or below the sixth grade; 31% of the programs were used by students in eighth grade and 42% in ninth grade (making this both the median and the modal grade level); 32% of the usage was in 10th grade; 25% in 11th grade; and 24% in 12th grade. The concentration of program usage is clearly at the high school level. The fact that percentages surpass 100 indicates that many programs were used at more than one grade level.

Most of the schools involved used programs with only a few students. Categories checked run over 300, but the largest percentage in any single category is the 11% who used between one and five students in the 10th grade. Very few schools used 300 or more students in their trials. Modal usage is five or six students. (Appendix A, "Individual Program Usage")

MENTAL ABILITY

The mental ability levels of the students actually used by the reporting schools (58% above average; 54% average; and 35% below average) hardly constitute a normal distribution curve, although the intent expressed by individual program users is 23% remedial, 74% regular instruction and 24% enrichment, which is considerably closer to the "normal."

LOCATION

Eighty-four per cent of the programs covered in the survey were used in class, 20% were used in study hall, and 22% were used at home. Close surveillance is the rule in program usage to date.

ROLE of the TEACHER

Sixty per cent of the program users saw the role of the teacher as an active supplement to the program. This "active supplement" presumably includes lectures, tests, talking about, and adding to the program in other ways. Forty-one per cent of the programs were used with the teacher "available for questions," and only in 11% of the cases were teachers used as "proctors only." Presumably most of these latter schools were involved in experimentation rather than regular instruction and were attempting to evaluate the program as an independent instructional agency (at least for that particular section of the subject matter).

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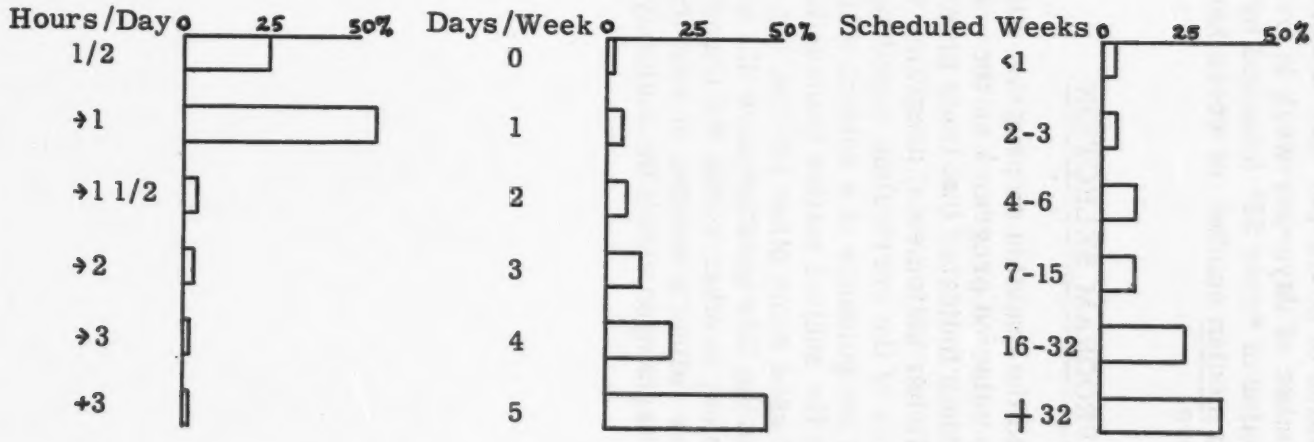
18. Amount of School Schedule Devoted to Programed Instruction



SCHEDULE (continued)

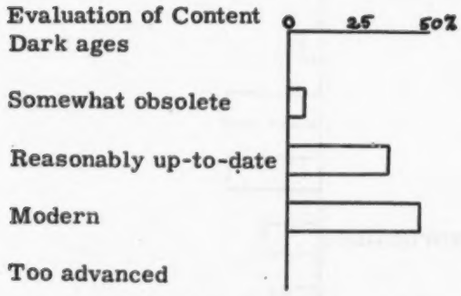
In the amount of school schedule devoted to programed instruction, the modal value of hours-per-day is between one half and one hour. Modal number of days-per-week is five, and scheduled weeks show a modal value of "over 32" (checked by 35% of the group). An approximated median number of weeks amounts to between one and two semesters.

EVALUATION—PROGRAM SELECTION

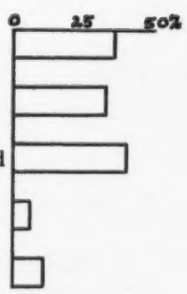
Responses to the question on program selection indicate that 11% of the users selected programs as the only ones available, 24% of these respondents indicated that their programs were selected on the basis of publisher statements, programs were picked with the aid and assistance of the curriculum coordinator by 23% of the group, 16% used the guidance of a subject matter consultant, and 42% relied upon the subject matter teacher in choosing the program. Twelve per cent used some other source, but unfortunately 90% of the people answering this questionnaire did not indicate any basis for program choice; in other words the percentages involved in the distribution above reflect a number of cooperative choices, but may not indicate the basis upon which the majority of decisions were made.

EVALUATION—PROGRAM CONTENT & TESTING

19. Evaluation of Content



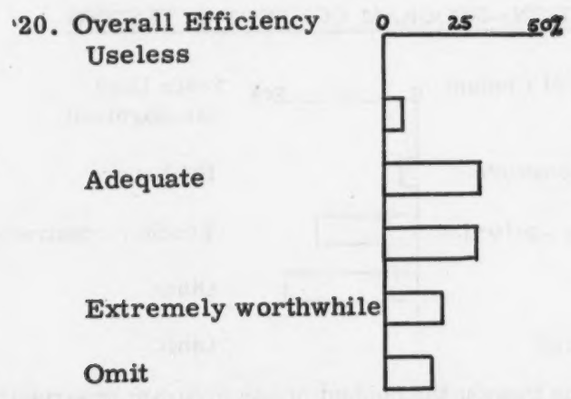
Tests Used



No one thought the content of any program deserved the category of "dark ages"; 6% allowed that the program they had used was "somewhat obsolete"; 37% thought their program "reasonably up-do-date"; 48% considered their program "modern"; and no one thought the program material "too advanced."

For their criterion testing, or the measure of what the students learned from the program, 37% of the respondents used a standardized test; 33% relied upon a publisher supplied test; and 40% used a teacher constructed test, 7% used another test and 11% omitted any response.

EVALUATION—OVERALL EFFICIENCY



No one considered the experience with programing "useless"; for 6% the experience was something between "useless" and "adequate"; 30% considered the programing experience "adequate"; and 29% considered it something better than "adequate." Eighteen per cent considered their program use as "extremely worthwhile"; while 2% checked more than one category. Fifteen per cent of the respondents did not check any evaluation of overall efficiency; many of these wrote comments such as "too early to judge," and "one test is not enough."[13]

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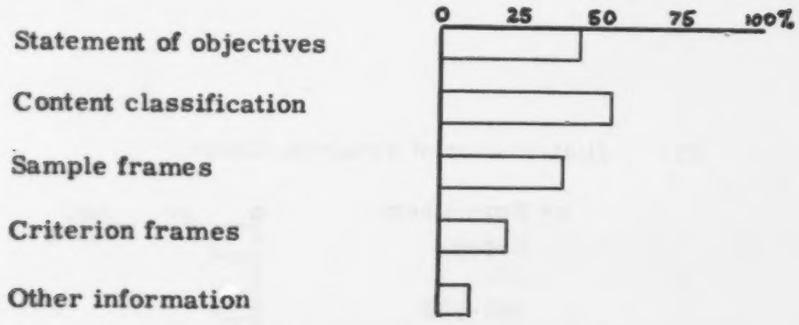
13 Different school systems of similar size and type using the same program under similar circumstances come up with completely different "evaluations." This obviously reflects different standards, expectations, methods of judgment, tastes and the like. It also points up one of the major difficulties in designing "evaluative criteria" for programed instruction. It would further imply that caution should be used in allowing the "experiences of others" and "testimonials" to enter into the decision making process concerning programs.

PROGRAM INFORMATION WANTED

21. Information About a New Program Would Include

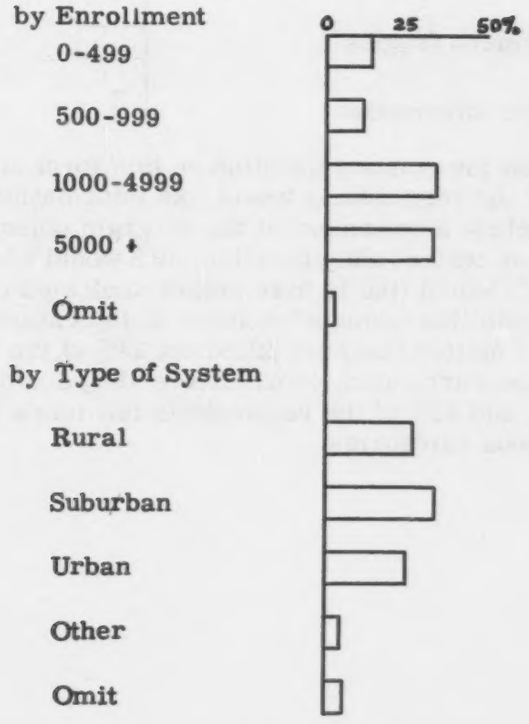


The last information question on this form elicited the fact that 34% of the respondents would like information on any new program to include a statement of the program objectives; 53% want some kind of content classification; 39% would like to see sample frames; 21% would like to have author-indicated criterion frames; and 10% would like some other form of discriminative guidance.

Subject matter teachers filled out 23% of the individual program usage forms, curriculum coordinators 16%, audio-visual representatives 3%, and 29% of the respondents fell into a wide group of miscellaneous categories.

PROGRAM USERS—by SIZE and TYPE of SCHOOL

22. Distribution of Program Usage



PROGRAM USERS—by SIZE and TYPE of SCHOOL (continued)

The distribution of actual program usage by enrollment and by type of school system is given in Figure 22. A more complete breakdown of usage responses, also by enrollment, is given in Appendix B, Table III. A few unusual proportions are worthy of mention.

Smaller school systems are using programs in more than their enrollment proportion of "Trial Basis" and "Integral Part of the Curriculum," while the larger schools are using a greater percentage of research design. The larger schools do not keep up their share of enrichment usage, have more active teacher supplement to the programs, but used a smaller proportion of subject matter teachers as their basis for selecting the program. Smaller schools, in proportion, more often considered programs "Modern," while larger schools leaned more conservatively to "Up-to-Date."

In the choice of tests used to evaluate student progress with the programed material, large schools used standard and teacher-constructed tests very heavily, but for some reason used less than their share of publisher-supplied tests.

The smallest systems "went overboard" in judging the overall efficiency of program usage, their larger colleagues being somewhat more conservative. In the final section of Table III, it is the larger schools who are most specific in their requests for new program information. A statement of the program objective, sample frames, and author-designated criterion frames are all high on their lists.

A further breakdown of individual program usage data by subject matter is presented in Appendix B, Table IV. The proportionate number of copies in each subject matter is presented in the first section of Table IV. Local programer's title, project director and purpose and form of presentation are given for each subject matter, as well as the number of programs used in each grade, and the student ability levels involved.

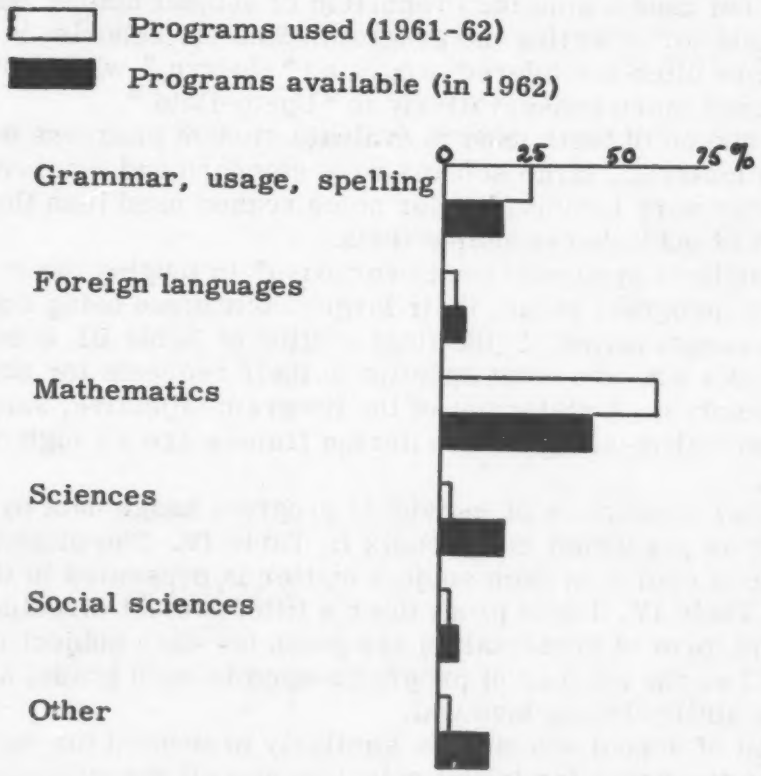
Amount of school schedule is similarly presented for each subject, as are the bases for initial selection and all the evaluations mentioned in the preceding section. A final breakdown shows the number of schools in each enrollment category using each subject. Small numbers in each cell and the relatively few programs available this year make comparisons difficult if not meaningless. The breakdowns in Tables II, III, and IV are included principally so that cooperating schools will be able to place their usage in a larger perspective.

III

THE USAGE SURVEY COMPARED WITH PROGRAMS '62

PROGRAMS USED and PROGRAMS AVAILABLE

23. Subject Area



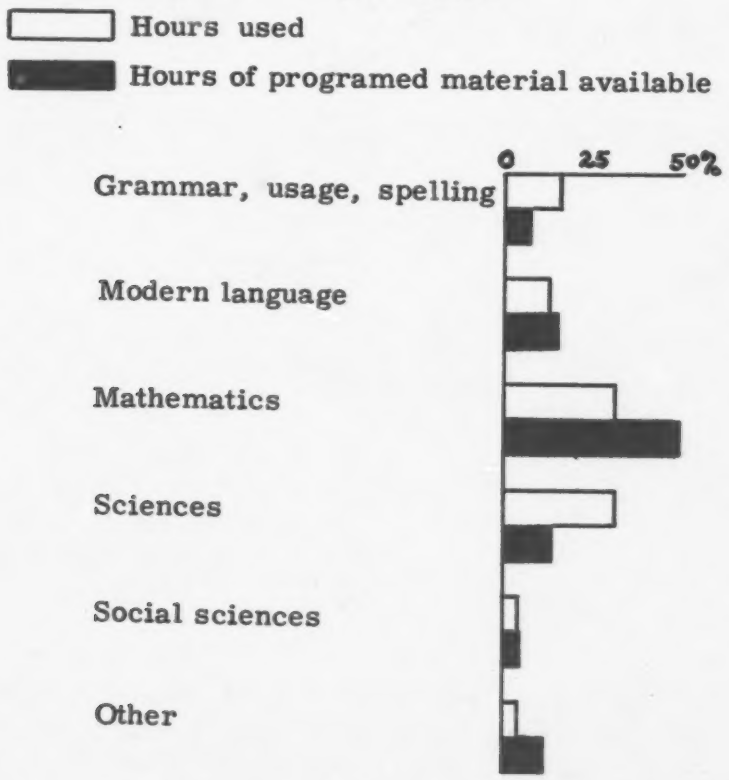
An interesting comparison is afforded by data on program subject areas available in Programs, '62 and the present data on the subject matter of programs actually used. Programs in grammar, usage, and spelling constitute 17% of the programs now available and constituted 25% of the programs used. Programs in foreign language constitute 8% of the programs available, 4% of the programs used. Mathematics programs, which represent the majority of 34% of programs available, constituted an even larger proportion (61%)

PROGRAMS USED and PROGRAMS AVAILABLE (continued)

of programs used as reported in the survey. Nineteen per cent of the programs now available are in science, but only 3% of those being used are science programs. Six per cent of the programs available and 3% of the programs used are in social science. All other categories make up 15% of the programs available; only 3% of these other categories of programs were used by the schools reporting. In the case of mathematics and grammar, where the percentages used are actually in larger proportion than the percentages available, the few programs that were available a year or more ago dominate present usage.

PROGRAM HOURS

24. Hours of Programed Subject Matter



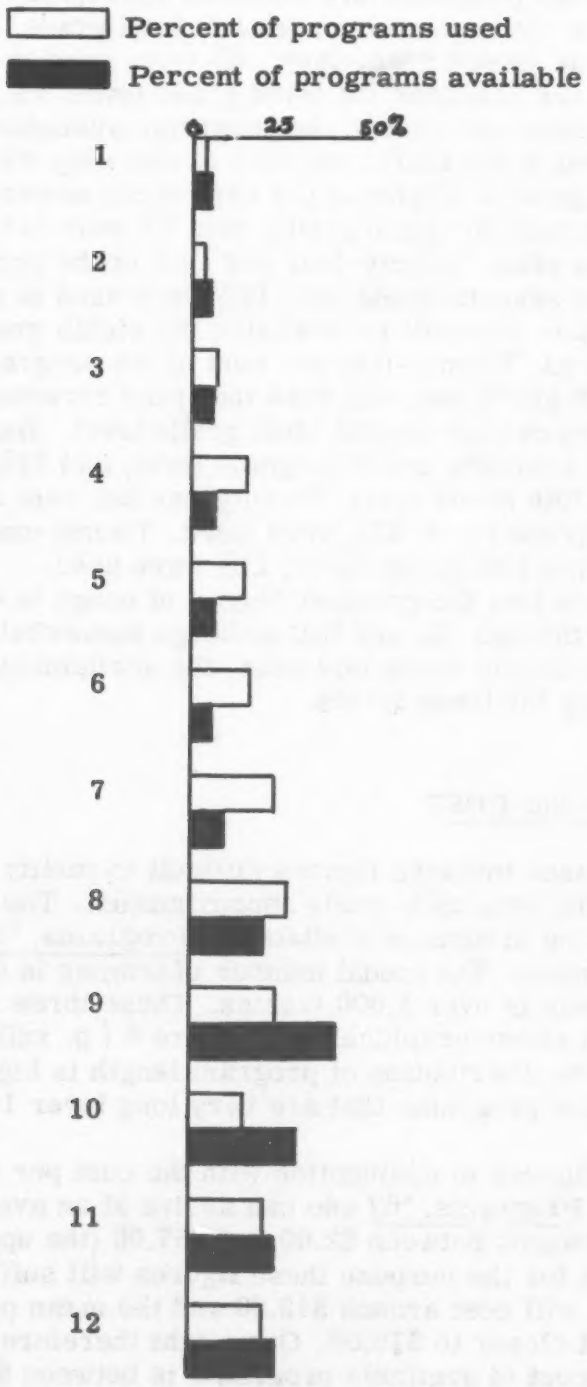
In a comparison of available program hours with the number of program hours actually used this year, some approximations are represented in Figure 24. Grammar, usage, and spelling constitute 8% of programed hours (to be) available and constituted 16% of the hours actually used. Modern language shows a very nice consistency

PROGRAM HOURS (continued)

with 13% of the hours available and 12% of the hours actually used. Mathematics represents 49% of the programed hours available and 31% of the programed hours used this year. Sciences represent only 14% of the hours available, but involved 31% of the hours used. Social science is 4.6% of the hours available, was 4.7% of the hours used. Other subject matter covers 11.4% of the hours available and only 4.7% of the hours used this year.

PROGRAMS by GRADE LEVEL

25. Grade Level



PROGRAMS by GRADE LEVEL

In a comparison of the number of programs usable at each grade level, 4% of the available programs are listed as appropriate for first grade level; 6% in the survey were used in first grade. Four per cent are suitable at second grade level, 6% were used at that level. Eight per cent are available for third grade level, 7% were used at that level. Sixteen per cent of the programs available are available for each level in the fourth and fifth grade; only 8% were used in each of these grades. Eighteen per cent of the newer programs available are aimed for sixth grade, only 7% were actually used in that grade this year. Twenty-four per cent of the programs to be available are for seventh grade use, 10% were used in seventh grade. Twenty-eight per cent will be available for eighth grade use, only 21% were thus used. Twenty-five per cent of the programs available are for ninth grade use, and here the trend reverses: 42% of the programs surveyed were used at ninth grade level. Sixteen per cent of programs available are 10th grade level, and 31% were used this year at the 10th grade level. Twenty-one per cent are available at the 11th grade level, 25% were used. Twenty-one per cent are available at the 12th grade level, 24% were used.

This data indicates that the greatest degree of usage is now going on in grades nine through 12, and that although somewhat less was done at eighth grade and below last year, the availability of materials is improving for these levels.

PROGRAM LENGTH and COST

The next comparison involves figures difficult to justify accurately but interesting even as a crude approximation. The median number of frames in the programs available in Programs, '62 is approximately 2,000 frames. The modal number of frames is closer to 1,000, while the mean is over 3,000 frames. These three figures simply point out what shows graphically in Figure 6 (p. xxi) of Programs, '62, that the distribution of program length is highly skewed towards the few programs that are very long (over 10,000 frames).

Using the same figures in conjunction with the cost per frame data also supplied in Programs, '62 one can arrive at an average program cost which ranges between $2.00 and $57.00 (the upper limit is not finite, but for the purpose these figures will suffice). The median program will cost around $12.00 and the mean program (by length) would cost closer to $19.00. One might therefore say that a loose average cost of available programs is between $12.00 and $19.00.

PROGRAM LENGTH and COST (continued)

In terms of the data of the usage survey, these cost figures are really remarkably close. The largest single category, checked by 37% of the respondents, paid between $10.00 and $15.00. In other words the cost of programs in the last year or two averages between $10.00 and $15.00 and judging by presently available figures, that cost is likely to be maintained in the immediate future.

IV

RESEARCH AND INFORMATION WANTED

Responses to the question "What research would you like to see done?" indicate a wide diversity in the definitions of the term "research."

One group of comments requested the development of programs, particularly at the elementary level. A second group of respondents are concerned with the evaluation of existing materials. Evaluations desired range from a simple stamp of quality assessment ment to a fairly sophisticated breakdown evaluating groups in terms of age, intelligence, and so forth. Another group is willing to evaluate programed materials themselves, but finds they do not have personnel or know-how. One comment specifically requests statistical evidence verifying publisher claims; a variant on this theme wants publisher data and research on every program developed with the hope that this material will help increase quality, and a third comment speaks for itself, "We have examined quite a few sets of programed materials. We have been totally unwilling to seriously consider some of them because of the disregard apparently held for research and curriculum development in the field [by] the program writers." A different, but familiar category of comments continues to demand the evaluation of programed materials in comparison with conventional materials. This demand for "proof" of the innovation is a most logical and persistent one; there are many psychological factors to be faced in any new technique—and some of the most critical eyes in the world of colleagues, parents and boards of education will be focused on this matter of the end result: "Does it work?" "As well?" "Demonstrably better?".

Somewhat related is the group who wants to know more about what program users do—to what extent they have used programs, in what manner, and myriad utilization details, asked, one suspects, to guide local introduction of these new materials. To a great extent it is this group, and certainly this purpose, for which the present report has been compiled. At least the beginnings of simple utilization data are here available in answer to the comments requesting information on small school use, use in combination with texts, and even large scale field trials.

Several users want information in greater depth than is yet available; a half dozen want research findings on the value of programed material in remedial instruction; almost as many request

research on the use of programs with especially talented students. A suggestive comment in this connection comes from a school system whose initial use of programed instruction was for the talented, but which is now planning to broaden its use to include a wider spectrum of ability levels. One comment encompasses this whole area to ask for research on the effects of programed instruction upon the individualization of instruction while another pertinent comment asks for research on the problem of utilizing programs with whole class groups.

There were many comments on the matter of program costs; some of these recur again in this question of research that schools would like to see done. One such comment comes from a school system well involved in programing: "I see this problem in two parts. One, teachers trained to write programs (I cannot justify the use of a substantial amount of school funds for this purpose). Two, teachers trained to become more sophisticated in the use of programed materials (for this I can justify use of school funds)." Other cost comments run from "No financial problems at this time," through "Yes, if usage is extended," "The cost of materials exceeds textbook budget," "The expense of programs and machines is high and much material is not reusable," "Moderate, it will require budget adjustments," "The initial investment is so great; some teachers would like to use programed material [completely], but finances prohibit [such costly] purchases." Several users mention the specific problem of clearing texts through a state approval source and this is both a curriculum and a financial limitation. One commenter estimates that the cost is going to be about four times that of textbooks. And a last financial comment, "Lack of funds available presents problems in securing material and equipment to carry out research...program budgets are exhausted to the limit." This last comment must be weighed against the situations reported on the financing of programs where the great majority of the schools using programed materials are both currently operating and planning to continue their use of programs within their regular budget.

A final category of comments checked on the question of research desired is illustrated by what may be a fairly representative situation. "Information on ways of utilizing and research being done is perhaps available but we need a person with time to read, report, and study it." "A system such as ours is too large for us to be able to spend the time necessary to study such materials as programed learning and our knowledge is sketchy, and yet we are too small to afford the personnel necessary to keep up with such developments."

RESEARCH AND INFORMATION WANTED

All in all, while a great many of these comments are not directly pertinent to the pure form of academic research, the need they show for additional information, guidance and evaluative help, is quite vivid, and the willingness to look at research reports is certainly highly appropriate to a young field like programed instruction. The fact that the searching for information is not completely uncritical is a matter of considerable encouragement for those involved in the research of program fundamentals and applications.

V

SUMMARY AND DISCUSSION

APPRECIATION

In general surveys, a return of 20% is considered very reasonable; of the nearly 15,000 school systems to whom these questionnaires were sent, the return of over 3,000 forms is a rather remarkable tribute to busy school administrators and teachers all across the country who gave time and thought to their return.

SUMMARY: Users — Non-users

The overall familiarity of even non-users with terms of the programed instructional field is an indication of the impact of this new field upon education. For both users and non-users professional publications play the dominant role in providing initial information about programed instruction. The utility of Lumsdaine and Glaser's collection of articles for the NEA shows in their dominance of the early literature in programing.

The gathering of sample programs is the predominant informational activity of both groups, although a surprising 34% of users are using consultants along with their programs. The users have also made more of an attempt to inform lay groups about programed instruction.

Most schools using programs are at the "few student" trial stage and a few are using their programs as part of regular group instruction; some even incorporate research design and controls in more formal experimentation. Enrichment and remedial instruction vie closely with regular instruction as purposes for which programs have been used. Non-machine use of programs far exceeds machine usage at present. And the regular budget accounts for almost 90% of both present and planned school financing of these materials.

Teachers and curriculum coordinators initiated most of the program use, but 50% of the responding users did not even answer the question as to whether teachers were provided time for using or developing programed materials; a few larger systems have made some provision in this respect.

It apparently takes less than a year from initial contact to program implementation. Reactions are generally favorable from all groups: parents, teachers, administrators, boards of education and students; and the using schools are strong in expressing a need for additional information and research in the field.

2

SUMMARY: Users -- Non-users (continued)

One generality may be made in connection with the size of school systems responding. The early users of programed instruction are likely to be the larger school systems.

SUMMARY: Individual Program Usage

Mathematics programs are the most available and most used. While most programs are obtained from commerical sources, a respectable 19% have been locally programed, usually by a subject matter teacher. The teacher is also most often the director of any program project; most usage is presently on a limited trial basis. Program cost appears to be between 10 and 15 dollars per copy.

Non machine formats predominate, and most usage is without supplementary materials.

Present programs are being used mostly at the junior and senior high school levels, however, almost half of the programs are also reported used at or below sixth grade. The students involved were usually of average intelligence or above; for them the programs were a regularly scheduled part of classroom instruction, with the teacher in an active role.

Evaluations of program content were generous (almost half considered their program content "modern") and while many respondents felt that it was too soon for overall evaluations, the responders clearly lean towards the favorable side.

Program publishers would be well advised to note the variety of information respondents would like to see accompanying any new program: a statement of objectives, content classification, sample frames, and author-indicated criterion frames.

Two breakdowns of the returns by size of system enrollment are presented at the end of Parts I and II.

The programs used are compared in Part III with the programs available in September 1962. Mathematics still dominates, but less strongly in the proportion of programs becoming available. The number of hours of science material in use is second to mathematics, and will apparently continue to be. While present usage is centered at the high school levels, both interest and availability are spreading rapidly into the elementary level.

A further key is offered to program producers and researchers in Part IV. While many users want programs graded and stamped, another group wants information and assistance which will enable them to form their own evaluations.

DISCUSSION

Some areas mentioned briefly in preceding sections are here brought together for comparison and more complete discussion.

MACHINE VS. TEXT

One hears much discussion and opinion on the question of whether or not hardware is necessary in the use of programed instructional materials. This survey contributes certain pertinent facts:

a) The non-using schools are undecided.

Seventy-three per cent of non-using schools are at present undecided as to the form in which they will use programed instruction in the future. The number of non-using schools who plan to use programs alone, (i.e., without machines) is small; so is the number who plan to use programs in machines (Fig. 5).

b) The large majority of schools using programed materials are not using machines.

While the specific question of machine vs. text was not asked of program users, information they furnished on form of program presentation provides a basis for comparison. Horizontal texts were used by 28% of the program users, vertical texts by 38%, and machine programs without machines were used by 7%. These "paper" programs add up to 73% of the individual program usage. In contrast, teaching machines were used by 12% of the total. Of the additional 7% who responded with multiple checks on this question, 3% used combinations of other formats (horizontal, vertical, etc.) with machine presentation and 4% used non-machine combinations. (The 2% checking auditory presentation would presumably also need some variety of hardware).

So, while the term "teaching machine" has both caught the fancy of the press and frightened certain elements of the public, the schools have obviously not been stampeded into using the hardware. Instead of centering their attention on teaching machines, the schools are interested in and using the programs themselves.

PURPOSES and INTENTS

Some interesting variations in plans for program use and declared intents for which programs were actually used are compared in Table I.

PURPOSES and INTENTS (continued)

Table I

Two Dimensions of Program Usage-Purposes and Intents

	Non-Users (Planned)	Users (Admin.)	Individual Program Usage (Intent)	Reports (For Mental Ability Level)	
Remedial	29%	55%	23%	Below Ave.	35%
Regular Instruction	20%	68%	74%	Average	60%
Enrichment	34%	60%	24%	Above Ave.	58%
Trial Basis		57%	54%		
Integral Curriculum		43%	27%		
w/Research Design		23%	21%		

Non-using school systems were asked their plans for program usage. Using school systems (responses usually filled out at the higher administrative level) were asked both their plans for similar materials in the future and their degree of present involvement in research. Individual Program Usage sheets contained three related items:

1) A statement of overall purpose (the experimental involvement again, —"On a limited trial basis," "As an integral part of curriculum," or "With controls and research design").
2) Number of students using the program in each mental ability level and,
3) Number of students for whom the usage was with remedial, regular or enrichment intent.

The non-users do not plan to use programed materials primarily for regular instruction. Using systems, on the other hand, indicate that on the basis of their experience with programs, 68% plan to use similar materials for regular instruction. And the individual program user makes it quite clear that the primary intent of his use of programs was for regular instruction. Whether these figures may be interpreted consecutively is moot; programed instruction may have an initial appeal for its special uses, either remedial or enrichment, but with actual experience the appreciation of its possibilities for regular instruction would seem to grow perceptibly. Even the mental ability level of the largest proportion of student usage favors the average.

Users at the administrative and operating levels concur in their overall purpose of program usage on a "limited trial basis" and "with controls and research design." A minor discrepancy occurred in the proportions who indicated that they were using programs as an integral part of the curriculum (for regular in-

struction). Forty-three per cent of the administrators checked their present use as "for regular instruction" while only 27% of the individual program users checked (as a statement of overall purpose)—"an integral part of the curriculum."

Whether this is due to a lack of communication between these two levels is hard to say. Certainly those closer to the program usage level would appear to be aware of the trial or experimental nature of the operation. From the point of view of higher administration, it is pretty literally true that a great many students were getting regular instruction, even though they were involved in trial or experimental program usage. A further explanation of this discrepancy may come from the fact that the administrators more often checked multiple purposes (their percentages total well above 100), whereas, at the program using level respondents apparently had a more specific (and possibly more realistic) knowledge of their activity and therefore checked only one purpose (their percentages total much more closely to 100).

INNOVATION in EDUCATION—A Case Study

Dr. Henry Brickell's study of instructional change in New York State[14] covers so many of the problems in innovation that it may be useful to review some of the points he makes (italics, below) and check them against the reports of users of programed instruction.

The rate of change in foreign language, mathematics and science courses tripled in the 15 months after Sputnik was sent around the world. In this survey of programed instruction, only mathematics seems to be maintaining this leading role (Fig. 23.).

The non-public schools do not match the rate of change of the public schools. The few non-public schools sampled in the present survey would sustain this impression. This pattern has also appeared in the introduction of new curricula.

While initial interest in programed instruction has been largely expressed by the high schools, the public elementary levels are already using some of the "higher level" programs and as more materials come into view their interest seems to be rising rapidly.

Most of the attention paid to course changes in public schools resulted in new programs for above average students in junior and senior high schools.

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14 Brickell, Henry M. Organizing New York State for Educational Change, State Education Department, Albany, New York, 1961.

In the present usage survey, the average student seems to be getting a better break. Sixty percent of current usage is with average students (see Table I and accompanying discussion, above).

Dr. Brickell's discussion on the role of the public, the board of education, and the school administration seems well supported in programed instruction usage. Usage occurs most easily when parents and board are not actually opposed (see Fig. 11.), and when the administration gives not only attention but shows some activity in favor of the innovation.

The classroom teacher can make only three types of instructional change in the absence of administrative initiative: change in classroom practice, relocation of curriculum content already in existence, and the introduction of a single special course at high school level. The many teachers who have been initiators in programed instruction may have done so under the first category, change in classroom practice.

Other faculty members ordinarily begin to prefer new methods within four months to a year after a novel program has been introduced, regardless of their very early reaction. Certainly this period had passed for the using respondents (Fig. 9.) and the teacher reactions support Brickell's observation without further comment. (Fig. 11.)

Brickell reports finding some evidence that the greater the time lag between learning that a new program was to be introduced and actually beginning it, the greater the opportunity for teachers to become anxious. This hypothesis is only slightly supported by the present data on programed instruction. Most of the programs that took over a year to get into action report a teacher reaction of "favorable," some are "neutral," and a few "enthusiastic." However, and clearly in support of Dr. Brickell, all of the systems reporting an "opposed" reaction from teachers did in fact take a year or longer from initial contact to trial use, and most of them took six or more additional months to get programs into the classroom.

The real source of rigidity in an educational program is not the written guide or textbook, but is the teacher who knows no more about the subject than is contained in that guide or book. As one of the newer instructional approaches which offers greater flexibility, programed instruction has already run up against this problem with the teacher, who now has material with which the student must work on an individual basis. Understandably, many a teacher feels considerably more lost than when he worked with students on a familiar group basis. The quality of teacher flexibility involves more than academic knowledge, and nothing is going to dramatize the need for teacher ingenuity and flexilibity any more forcefully than programed instruction

Instructional innovations are almost always evaluated by observing the reactions of the students while they are receiving the new instruction. Certainly local school systems cannot be expected to use anything other than observational evidence. Conversely, teachers who are interested in observing and evaluating new techniques such as programed instruction should be given the opportunity to talk with the students. Brickell says that over many months of talking with large groups of teachers there is no doubt whatsoever but what the teachers quote about student behavior is the single factor which carries the greatest impact.

In a check of evaluations of "overall efficiency" of programed instruction (Fig. 20.) as compared with reported student reaction (Fig. 11.), of the schools judging program usage as "extremely worthwhile," 24 reported a student reaction of "enthusiastic," eight "favorable," and only one as low as "neutral." On the other hand, none of the schools judging program efficiency as "adequate" or less reported a student reaction higher than "favorable."

Instructional procedures which students react to with interest or enthusiasm are ordinarily judged to be successful. The alternate for this is no more available for programed instruction than it has been for most other innovations. "When new instructional programs are invented adequate methods for evaluating them are not invented simultaneously." When researchers object to the schools saying, "but this program works," they should remember Brickell's statement that a school using a new program has the choice of either measuring it with the "wrong" yardstick or making a rough subjective estimate by observing student response. "Neither alternative is adequate for a [wide spread] program of accelerated change. Something better will have to be designed" (p. 34).

Another point connected with user reaction as the sole method of evaluation has to do with the familiar phenomenon that almost everything new works better. *The attention, encouragement, and recognition given to teachers by people outside the classroom during the introduction of new programs are among the strongest causes for this success.* For Brickell this points out the necessity for using comparison groups which use an old method but which are supplied with the same ingredients which energize the new method, teacher enthusiasm, attention, visitors, and so forth.

The professional associations are the supreme communicators in the profession...the persuasive effect of printed material is relatively slight when compared to the informal contact among colleagues. The present respondents, both the user and the non-user, report their initial contact as far greater through publications than through colleagues, although colleagues were the second source.

"Initial contact," of course, is not necessarily "persuasion." This study actually parallels Brickell's findings in that professional associations are the most frequent source of professional literature.

Commercial organizations such as text book publishers are extremely powerful. On the other hand, once they begin to market a product they serve as powerful inhibitors of change because they want wide distribution and repeat sales of the same product. In no field within recent recall is this truer than in programed instruction where teaching machines were often the teacher's first contact with this new potential method. The second point of concern in commercial developments is that machines tend to be limiting factors in the design and use of programed materials, having in most cases, neither the flexibility desired nor the arrangements for many modalities which will eventually be needed. Says Brickell, "It is inconceivable that commercial organizations will stand aside over the next decade, let us say, while the few people in the profession who have the inclination, skill, time, and resources proceed to write new programs, test them in pilot applications, revise the materials, evaluate them thoroughly through extensive field testing in schools, and then somehow arrange for volume production and volume distribution. "The commercial concerns have already moved heavily into the area...they will undoubtedly play the dominant role" (p. 61). At present 24% of program users acknowledge directly that their choice of program was based on a publisher statement. *The most formidable block to instrucational improvement today is that education...fails to distinguish the three phases of change [which have distinguished science and industry]:* The design of the innovation is properly apart from reality, the evaluation of innovation depends upon close surveillance, and the dissemination of a new approach must be through circumstances as "normal" and "real" as possible.

The design of programed instruction certainly blossomed in the laboratories of psychology as the same principles in actual classroom situations over many years did not. The present danger in programed instruction is in its adoption too thoroughly too early; more basic laboratory research is still needed to amplify our comprehension of the principles behind successful programing.

While field testing of programed materials is under way, the proportion under carefully controlled conditions is still low (20% at most optimistic estimates). The need is for long range and probably external guidance for large scale and carefully controlled local experimental usage. Local interest in "improving the product" needs to be supplemented by representatives of more general knowledge and basic relationships involved.

Dissemination of programed instructional techniques is perhaps the area most closely resembling Brickell's observations and suggestions. Few schools are adopting programs without seeing them in use in situations which to them are normal and real.

Our greatest barrier in...improving education...will be our loyalty to the inadequate organization and arrangements which exist today.

Perhaps the greatest problem in the future use of programed materials is only indirectly brought out by the questionnaires used in this survey, although some comments mention it specifically. When a student has completed a programed unit, the knowledge, ingenuity and diplomacy of the teacher is regularly tapped in guiding the student to his next most appropriate activity. Once the lock step of "uniform appointments" is broken, the guiding and advising role of the teacher may far outweigh the straight "lecture-instructional" role of tradition. This change must be understood and accepted by the teacher, and the system which supports him.

CONCLUSION

The general picture of program usage, despite all incomplete and difficult problems, emerges as encouraging for those schools who wish to experiment. While the gains remain hard to quantify, the full "Hawthorne" effect of attention is completely available, and the response of using systems shows that almost all parties involved react favorably to the use of programed materials.

While basic research and program evaluation remain general problems, one of the most acute practical problems likely to be faced by users of programed materials is that of individual student rate of progress. And while the solutions are not yet facile, nor immediately likely to be, the problem of increased individual student activity should find many willing grapplers in education. It is a problem almost uniquely forced by the use of programed instructional materials.

APPENDICES

APPENDIX A

The Original Questionnaire Forms

with Response Percentages in Place of the Original Boxes

N = 1671

The Center for Programed Instruction, 365 West End Ave., N.Y.C. 24, N.Y.

U.S. OFFICE OF EDUCATION SURVEY

This sheet to be filled out ONLY by those school superintendents having LITTLE or NO EXPERIENCE with PROGRAMED INSTRUCTION

1. Are you familiar with any of these terms: Programed Instruction, Teaching Machine, Programed Learning, Automatic Teaching, etc.

yes	no
84%	

2. Have you ever read an article on programed instruction?

yes	no
90%	

3. Have you ever seen a teaching machine?

yes	no
73%	

– If "yes" to any of the above questions, please continue to fill out this sheet.

– If "no" to all three questions, please fill out the final section of this one sheet and return it to the address above.

4. Please check your initial source of information on programed materials.

Newspapers and Magazines	Professional Publications	Colleague	Lay Members of Community	Salesmen	Other (Specify)
32%	76%	12%	1%	18%	13%

5. Of which of the following have you read at least two issues?

A-V Instruction	AID	Automated Teaching Bull.	Programed Instruction	J. of Educ'l Psychology	Other with Programing articles (specify)
35%	6%	6%	24%	15%	15%

6. Which books have you read?

Automated Teaching (Galanter)	Teaching Machines and Programed Learning (Lumsdaine and Glaser)	Explaining Teaching Machines (Cramm)	Teaching by Machine (Stolurow)	Programed Primer (Markle)	Other (specify)
3%	15%	8%	3%	3%	2%

7. Have you examined a program?

yes	no	(omit)
44%	46%	10%

8. Which of the following steps regarding Programed Instruction have been taken in your system?

Called: A School System Conference	School Meeting	Set up a Planning Group	Appointed A Program Director	Sent Staff to A Programing Workshop	Utilized Consultants
9%	11%	6%	1%	13%	11%

8. Which of the following steps regarding Programed Instruction have been taken in your system? (cont'd)

Obtained Program Samples	Taken any steps To Inform Lay Groups (parents, etc.)	Other (specify)
35%	8%	10%

9. Which of these same steps do you plan to take in your system?

Call: A School System Conference	School Meeting	Set up a Planning Group	Appoint a Program Director	Send Staff to A Programing Workshop	Utilize Consultants
8%	8%	19%	2%	12%	18%

Obtain Program Samples	Take Steps to Inform Lay Groups (parents, etc.)	Other (specify)
35%	14%	5%

10. Do you intend to use programs

Alone	In Machines	Undecided	(omit)
7%	5%	70%	18%

11. Do you intend to use programed materials for

Remedial Work	Regular Instruction	Enrichment?	(some multipl checks)
29%	20%	34%	

12. Your funds will (probably) come from

Regular School Budget	Extra Local Funds	State Funds	Federal Funds	Other (specify) _____ _____
68%	3%	2%	6%	2%

Name and title of person filling out questionnaire _____

Name of School System _____

13. Total Pupil Enrollment	0–499	500–999	1000–4999	5000 +
	28%	18%	37%	13%

14. Type of System	Rural	Urban	Suburban	(other)
	35%	15%	20%	5%

This questionnaire has been ☐ easier ☐ same as ☐ harder than the many others you receive.

Comment:

N = 209

Center for Programed Instruction, 365 West End Ave., N.Y.C. 24, N.Y.

OFFICE OF EDUCATION SURVEY

This sheet to be filled out ONLY by those school superintendents whose SYSTEMS ARE USING PROGRAMED INSTRUCTIONAL MATERIALS.

1. What was your initial source of information on programed instruction?

Newspapers or Magazines	Professional Publication	Colleagues	Lay Members of Community	Salesmen	Other (Specify)	(omit)
16%	72%	23%	1%	8.6%	16%	6%

2. Of which of the following have you read at least two issues?

A-V Instructor	AID	Automated Teaching Bulletin	Programed Instruction	Journal of Educational Psychology	Other (Specify	
51%	20%	25	60%	33%	7%	12%

3. As you probably know, teaching machines are being sold from door to door. How many parents do you know of who have bought such materials?

None	A handful	A considerable number (estimate?_____)
4%	73%	23%

4. Which books have you read?

Automated Teaching (Galanter,	Teaching Machines and Programed Learning (Lumsdaine and Glaser)	Explaining Teaching Machines and Programing (Cramm)	Teaching by Machine (Stolurow)	Programed Primer (Markle)	Other (Specify) Author:	
14%	54%	19%	7%	19%	2%	35%

5. Which of the following steps regarding Programed Instruction have been taken in your system?

School System Conference Called	School Meeting Called	Planning Group Set Up	Appointed a Program Director	Staff Sent to A Programing Workshop	Consultants Utilized
22%	25%	32%	9%	33%	34%

Program Samples Obtained	Steps Taken To Inform Lay Groups (Parents, etc.)	Other (specify)	omit
82%	47%	10%	2%

6. Which of these steps do you plan to take in your system?

Will Call School System Conference	Will Call School Meeting	Set up a Planning Group	Appoint a Program Director	Send Staff to A Programing Workshop	Utilize Consultants
8%	6%	17%	3%	22%	27%

Obtain Program Samples	Take Steps to Inform Lay Groups (Parents, etc.)	Other (specify)	
43%	32%	5%	(omit) 31%

7. What use of programs have you made?

Tried out on Individual Pupils	Tried out on Groups of Pupils	Developed Own Program(s)	Tested Experimental Hypotheses	Other (specify)	
46%	80%	17%	14%	2%	(omit) 3%

8. Which use of programs do you plan?

To try out on Individual Pupils	To try out on Groups of Pupils	To Develop Own Program(s)	To Test Experimental Hypotheses	Other (specify)	
31%	52%	17%	18%	3%	28%

9. Are teachers using or developing programs doing so

On Their Own Time	On Released Time	In Paid Overtime	In Paid Vacations		
44%	15%	2%	4%	"school" or "regular" time 4%	(omit) 52%

10. First program use in your system is traceable to:

A Teacher	A Curriculum Coordinator	An A-V Director	A Principal	Other Admin. (specify)	Interested Laymen	Any Other (specify)	
22%	21%	5%	20%	32% (supt. most often)	3%	9%	(omit) 8%

11. How was your use of programed material financed?

Regular School Budget	Extra City Or Local Funds	State Funds	Federal Funds	Publisher	Other (specify)	(Omit)
90%	2%	2%	4%	7%	9%	2%

12. How do you plan to finance future program use?

Regular School Budget	Extra City Or Local Funds	State Funds	Federal Funds	Publisher	Other (specify)	
90	3	3	9	5	5	6

13. Your programs were used:

On a Limited Trial Basis	For Regular Instruction	With Controls And Research Design	
57	43	23	3

Time Span

14. From your first contact with Programed Instruction to actual usage (even on an experimental basis):

Immediately	1-2 mos.	3-6 mos.	About 1 yr.	Over 1 year
1	10	34	35	18

15. From such first experimental use of programed material to actual classroom instruction:

Immediately	1-2 mos.	3-6 mos.	About 1 yr.	Over 1 year
20	6	23	19	7

16. On the basis of your experience with Programed Instruction, do you plan to use similar materials in future for:

Remedial Work	Regular Instruction	Enrichment	Not at All	
55	68	60	1	

		Enthusiastic	Favorable	Neutral	Opposed	Strongly Opposed
17.	Reaction from Teachers	22	52	13	3	0.5
18.	Admin.	27	53	9	1	
19.	Parents	12	37	23	2	
20.	Bd. of Ed.	12	45	19	0.5	
21.	Students	24	48	11	4	0.5
22.	Other (specify)	0.5	0.5	0.5		0.5

23. Do you feel that people in your system are adequately prepared to evaluate
Non-programed instructional materials? Programed materials?

yes	no		yes	(Omit)	no	(Omit)
79	14		54	8	35	12

Do you anticipate more than usual financial problems in future use of Programs?

yes	no	(Omit)	Comment:
21	70	9	16%

25. What research would you like to see done? (use a separate sheet if you care to)

26. Which of the following are you not getting enough information about?

Other School Usage	Ways of Utilizing	Programs Available	Program Constructing	Research Being Done
41	44	51	32	54

If you have actually made use of one or more programs -- please fill out a yellow sheet for each program used. (This may, and perhaps should, be done by the person directly in charge of each program.) Additional yellow sheets are available upon request.

Name and title of person filling out this questionnaire

Name of School System

27. Total Pupil Enrollment

0-499	500-999	1000-4999	5000 +
17	11	38	32

28. Type of System

Rural	Suburban	Urban	(Other)
29	35	26	3

This questionnaire has been ☐ easier ☐ same as ☐ harder than the many others you receive

Comments (15%) 54% 33% 4%

0111230

APPENDIX A

"Individual Program Usage" Questionnaire - Showing Response Percentages

N = 282

The Center for Programed Instruction, 365 West End Ave., N.Y. 24, N.Y.

U.S. OFFICE OF EDUCATION SURVEY – INDIVIDUAL PROGRAM USAGE SHEET

CPI is conducting this survey for the Office of Education, U.S. Dept. of Health, Education and Welfare, to determine current use of programed materials. The information will be published in an annotated bibliography – to be of assistance to schools in deciding on, or choosing between, programs.

(Please supply a separate sheet of information for each program; extra yellow sheets will be sent upon request).

1. Subject Area

Math	Science	Foreign Language	English	Spelling	Social Studies	Other (specify)	(Omit)
61 %	3	4	21	4	3	3	2 %

2. Source

Amer. Institute Research	Center Programed Instruction	Encyclopedia Britannica Films	Grolier (TMI)	Harcourt Brace	McGraw-Hill	Science Research Associates
0	1	47	10	17	0.4	2

US Industries (Doubleday)	Locally Programed	Other (specify)		
0.4	16	3	3.9	

3. Number of Copies Used

0–5	6–23	24–49	50–99	100–292	300+	
18	18	27	16	15	5	1

4. Copy Cost

Free	Under 1.00	1.00–2.99	3.00–4.99	5.00–9.99	10.00–15.00	Over 15.00	(Mult)	
8	3	17	5	5	37	9	4	14

5. If locally programed: Name of individual(s) constructing program: _____

Programer's Title

Subject Matter Teacher	Curriculum Coordinator	Audio-Visual Dept.	Other (specify)	(Mult)
14	1	1	3	1

6. Director of the Project and his Title _____

Subject Matter Teacher	Curriculum Coordinator	Audio-Visual Dept.	Other (specify)	(Mult)	
23	9	1	16	3	48

7. Statement of Overall Purpose

On a Limited Trial Basis	As an Integral Part of Curriculum	With Controls & Research Design (Please supply, if at all possible)	Other Comment:	
54	27	21	5	4

8. Form of Presentation

Cards	Horizontal Text	Vertical Text	In Teaching Machine	Machine Program Without Machine	Auditory	Other (specify)	(Mult)	
0	28	38	12	7	2	1	7	4

9. Supplementary Materials Simultaneously Used with Programs

Regular Text	Moving Picture	Film Strip	Slides	Overhead Projector	Tape Recorder	Phonograph	
43	9	10	4	6	5	3	Omit) 45

Other (specify)
8

Number of students Using Program		0–5	6–20	21–40	41–100	101–300	300+	
10. In each Grade	1st	3.5	1.1	0.4	0.7		0.4	94
11.	2nd	2.8	1.4	1.4	0.4			94
12.	3rd	0.4	2.5	1.1	0.7		0.4	93
13.	4th	2.1	0.4	3.2	1.1	1.1		92
14.	5th	2.5	0.7	2.8	1.1	0.7		92
15.	6th	0.7	1.1	4.3	0.7		0.4	93
16.	7th	4.6	1.8	1.1	1.8		0.7	90
17.	8th	5.3	3.6	5.3	3.6	2.5	0.7	79
18.	9th	10.3	6.0	10.3	8.9	6.0		58

Number of Students Using Program (Cont'd)	0–5	6–20	21–40	41–100	101–300	300+	Omit) %
19. 10th	11.0 %	7.4	5.0	3.9	3.9	0.7	68
20. 11th	9 9	6.0	4.6	3.2	1.4		75
21. 12th	9.2	8.2	4.3	2.8			76
22. In each Mental Ability Level	(☐ IQ; ☐ Other, specify)						
23. Above Average	19	15	12	9	3	0.4	42
24. Average	11	14	15	11	6	1	40
25. Below Average	11	11	9	3	2	0.4	65
26. In each location: In class	12	12	2	18	15	2	66
27. In study hall	10	4	2	2	1		81
28. At home	10	4	4	4	1		78
with this intent: 29. Remedial instruction	10	6	4	3	2		77
30. Regular instruction	13	10	19	17	13	1	26
31. Enrichment	11	7	3	3			76
and with Teacher: 32. As active supplemen	9	10	17	12	10	1	40
33. Available for questions	12	9	8	7	4	0.4	59
34. As proctor only	5	1	1	2	2	0.4	89

Amount of School Schedule Devoted to Programed Instruction

35. Hours/Day	½ 25	to 1 hr 56	to 1½ hrs 4	to 2 hrs 3	to 3 hrs 1	over 3 hrs 1	9
36. Days/Week	0 2	1 5	2 7	3 10	4 19	5 46	11
37. Scheduled Weeks	1 or less 3	2–3 4	4–6 10	7–15 10	16–32 25	Over 32 35	14

38. In choosing this program, did you use	The only one Available 11	Publisher's Statement 24	Curriculum Coordinator 23	Subject Matter Consultant 16	Subject Matter Teacher 42	Other (specify) 12	90

Evaluation:

39. Content	Dark Ages 0	Somewhat Obsolete 6	Reasonably Up-to-Date 37	Modern 48	Too Advanced 0

40. To measure what the students learned from the use of this program, did you use a test that was	Standardized 37	Publisher Supplied 33	Teacher Constructed 40	Other (specify) 7

11

41. Overall Efficiency	Useless 0		Adequate 30		Extremely Worthwhile 18	15
		6		29		

42. Helpful information about a new program would include	A Statement of Objectives 44	Some kind of Content Classification 53	Sample Frames 39	Author indicated Criterion Frames 21	Other (specify) 10

Comments:

Name of Person filling out this questionnaire _____

43. Title	29 Subject Matter Teacher	16 Curriculum Coordinator	3 A-V Dept.	29 Other (specify)

Name of School System _____

44. Total pupil enrollment ☐1 0–499 16 % ☐2 500–999 12% ☐3 1000–4999 35% ☐4 5000 + 34%

45. Type of System ☐1 Rural 28 % ☐2 Suburban 34 % ☐3 Urban 26 % Other 5 %

APPENDIX B

TABLE II REACTIONS†

ENROLLMENT	Enthusiastic	Favorable	Neutral	Opposed	Strongly Opposed
	1	2	3	4	5
			Teachers		
0-499	13	14	5		
500-999	5	14	3		
1,000-4,999	15	47	11	1	1
5,000+	12	32	8	6	
Totals	45	110	27	7	1
			Administrators		
0-499	17	16	1		
500-999	6	15	1		
1,000-4,999	20	42	8	1	
5,000+	11	37	9	1	
Totals	56	111	19	2	
			Parents		
0-499	8	12	9		
500-999	2	7	10		
1,000-4,999	11	30	19	1	
5,000+	4	26	11	4	
Totals	25	77	49	5	
			Board of Education		
0-499	10	16	4		
500-999	1	13	6		
1,000-4,999	10	41	13		
5,000+	4	21	17	1	
Totals	25	94	40	1	
			Students		
0-499	17	13			
500-999	3	13	6		
1,000-4,999	20	43	10		
5,000+	11	29	7	8	1
Totals	51	100	23	8	1

†Entries are # of schools checking each response; total N = 209

APPENDIX B

TABLE III INDIVIDUAL PROGRAM USAGE BREAKDOWN BY ENROLLMENT†

PURPOSE OF USING PROGRAMS

Enrollment	On a limited Trial Basis	As an Integral Part of Curriculum	With Controls & Research Design	Other Comment:	Omit
0-499	19	19	4	2	3
500-999	21	11	2	–	–
1,000-4,999	52	23	18	5	6
5,000+	55	20	33	6	1
Totals	152	76	58	13	11

NUMBER OF PROGRAM USAGES IN EACH GRADE

Enrollment	Grade 1	2	3	4	5	6	7	8	9	10	11	12	Multiple
0-499	1	1	1	1	2	2	1	8	17	11	15	19	44
500-999	2	2	–	1	2	1	2	8	17	16	6	12	33
1,000-4,999	6	6	7	5	3	5	10	22	34	24	26	22	91
5,000+	8	8	11	15	15	12	14	19	45	36	20	14	96
Totals	17	17	19	22	22	20	28	59	117	91	71	69	

INTENT

Enrollment	Remedial Instruction	Regular Instruction	Enrichment
0-499	11	33	11
500-999	6	26	10
1,000-4,999	22	69	28
5,000+	26	76	19
Totals	66	201	69

TEACHER

Enrollment	As Active Supplement	Available For Questions	As Proctor Only
0-499	24	23	2
500-999	20	20	–
1,000-4999	62	37	13
5,000+	57	34	15
Totals	164	116	31

†Entries are # of users checking each response; total N = 282

TABLE III (continued)

CHOICE BY

Enrollment	Only One Available	Publisher's Statement	Curriculum Coordinator	Subject Matter Consultant	Subject Matter Teacher
0-499	2	11	6	6	27
500-999	4	12	6	5	20
1,000-4,999	13	21	16	8	27
5,000+	13	21	36	24	42
Totals	32	67	66	44	112

EVALUATION

Enrollment	Dark Ages	Somewhat Obsolete	Reasonably Up-to-Date	Modern	Too Advanced
0-499	–	–	9	31	–
500-999	–	–	10	19	–
1,000-4,999	–	5	39	47	–
5,000+	–	11	42	36	–
Totals	–	16	103	135	–

TEST

Enrollment	Standardized	Publisher Supplied	Teacher Constructed	Other	Omit
0-499	15	16	16	2	4
500-999	15	12	15	–	2
1,000-4,999	33	36	35	5	11
5,000+	41	26	45	12	9
Totals	104	93	114	19	30

OVERALL EFFICIENCY

Enrollment	Useless		Adequate		Extremely Worthwhile	Omit
0-499	–	1	11	10	18	5
500-999	–	2	8	17	2	3
1,000-4,999	–	6	36	24	19	11
5,000+	–	6	29	31	11	18
Totals		16	85	83	51	41

TABLE III (continued)

HELPFUL INFORMATION ABOUT A NEW PROGRAM WOULD INCLUDE

Enrollment	A Statement of Objectives	Classification of Content	Sample Frames	Criterion Frames	Other
0-499	15	18	13	4	2
500-999	15	18	13	3	–
1,000-4,999	35	54	36	22	11
5,000+	57	57	45	30	14
Totals	124	149	109	59	27

APPENDIX B

TABLE IV INDIVIDUAL PROGRAM USAGE BREAKDOWN BY SUBJECT AREA†

NUMBER OF COPIES USED

Subject Area	*1-5*	*6-23*	*24-49*	*50-99*	*100-299*	*300+*	*Totals*	*%*
Math	34	38	47	21	23	8	172	62%
Science	–	1	1	3	3	1	9	3%
Foreign Language	4	3	–	–	1	2	11	4%
English	6	5	21	17	7	3	60	21%
Spelling	3	3	1	–	4	–	11	4%
Social Studies	–	1	–	2	4	–	7	2%
Other	2	–	3	–	–	–	7	2%
Omit	1	1	2	1	–	–	5	2%
Totals	50	52	75	44	42	14	282	= total N
%	17.7	18.4	26.6	15.6	14.9	5.0		

LOCAL PROGRAMER'S TITLE

Subject Area	*Omit*	*Subject Teacher*	*Curriculum Coordinator*	*Audio-Visual Department*	*Other*
Math	150	13	2	–	5
Science	2	5	–	1	1
Foreign Language	9	1	–	–	–
English	48	11	–	–	1
Spelling	8	1	1	–	–
Social Studies	1	6	–	–	–
Other	4	1	–	–	
Omit	–	2	–	1	–
Totals	224	40	3	2	9

†For full questions–see Appendix A Individual Program Usage form.

TABLE IV (continued)

PROJECT DIRECTOR

Subject Area	Omit	Subject Teacher	Curriculum Coordinator	Audio-Visual Dept.	Other	Multiple
Math	80	48	10	3	28	3
Science	4	1	2	–	2	–
Foreign Language	3	3	2	1	1	1
English	31	9	7	–	10	3
Spelling	5	1	3	–	2	–
Social Studies	4	2	1	–	–	–
Other	4	2	–	–	1	–
Totals	136	66	25	4	44	7
%	48	23	8.9	1.4	15.6	2.5

PURPOSE

Subject Area	Trial Basis	Integral Curriculum	Research Design	Other	Omit
Math	99	44	31	12	7
Science	2	6	2	–	–
Foreign Language	7	3	1	–	–
English	30	17	16	–	3
Spelling	5	1	4	–	1
Social Studies	4	2	1	–	–
Other	2	2	2	1	–
Totals	152	76	58	13	11
%	54	27	21		

TABLE IV (continued)

FORM OF PRESENTATION

Subject Area	Cards	Horizontal Text	Vertical Text	Teaching Machine	Without Teaching Machine	Auditory	Other	Omit	Multiple
Math	–	28	87	20	16	–	1	9	11
Science	–	3	1	–	1	–	–	2	2
Foreign Lang.	–	1	1	2	–	5	–	–	2
English	–	43	12	2	2	–	–	–	1
Spelling	–	–	–	5	1	–	1	–	4
Social Stud.	–	3	2	2	–	–	–	–	–
Other	*see Mult.	–	2	2	–	–	1	1	1*
Totals	–	80	107	34	20	5	3	12	21
%	–	28.4	37.9	12.1	7.1	1.8	1.0	4.3	7.5

EACH GRADE

Subject Area	1	2	3	4	5	6	7	8	9	10	11	12
Math	5	5	5	9	11	12	12	31	78	59	48	43
Science	1	2	2	2	2	2	2	3	3	1	3	4
Foreign Language	4	3	1	1	1	2	1	2	6	7	3	3
English	–	–	2	4	3	1	10	19	25	18	13	16
Spelling	3	2	4	4	3	1	3	2	4	1	1	1
Social Studies	1	1	1	1	1	1	–	2	1	1	2	–
Other	2	2	3	1	–	1	–	–	–	1	–	1
Totals	17	17	22	22	22	20	28	59	117	90	71	69

MENTAL ABILITY

Subject Area	Above Average	Average	Below Average
Math	113	98	56
Science	3	5	1
Foreign Language	9	5	3
English	23	39	30
Spelling	5	5	3
Social Studies	4	5	3
Other	4	6	4
Totals	162	166	100

TABLE IV (continued)

SCHOOL SCHEDULE DEVOTED TO PROGRAMED INSTRUCTION

Hours

Subject Area	½	*1*	*1½*	*2*	*3*	over 3
Math	24	112	9	6	3	1
Science	4	5	—	—	—	—
Foreign Language	5	4	—	1	—	—
English	20	29	2	1	1	—
Spelling	7	3	—	—	—	—
Social Studies	1	4	1	—	—	1
Other	4	2	—	—	—	—
Totals	70	159	12	8	4	2

Days

Subject Area	*0*	*1*	*2*	*3*	*4*	*5*
Math	3	6	7	4	33	98
Science	—	—	1	—	3	5
Foreign Language	1	2	—	1	3	4
English	2	3	10	16	9	11
Spelling	—	—	—	2	2	6
Social Studies	—	2	—	—	1	4
Other	—	1	1	4	2	1
Totals	6	14	19	28	53	129

Weeks

Subject Area	*1 or less*	*2-3*	*4-6*	*7-15*	*16-32*	over 32
Math	3	3	9	12	40	79
Science	—	2	1	—	3	3
Foreign Language	—	—	1	1	3	4
English	3	2	11	12	18	6
Spelling	—	—	3	2	2	3
Social Studies	2	1	2	-	1	1
Other	—	2	1	1	1	1
Totals	8	10	28	29	69	98

TABLE IV (continued)

CHOICE

Subject Area	Only One Available	Publisher's Statement	Curriculum Coordinator	Subject Matter Consultant	Subject Matter Teacher	Other
Math	16	49	36	26	76	24
Science	1	—	2	4	5	2
Foreign Lang.	—	3	4	3	4	1
English	12	14	14	8	23	5
Spelling	2	1	5	1	2	—
Social Stud.	—	—	—	1	6	—
Other	1	—	3	1	1	1
Totals	32	67	66	44	119	33

CONTENT EVALUATION

Subject Area	Dark Ages	Somewhat Obsolete	Reasonably Up-to-Date	Modern	Too Advanced
Math	—	13	65	74	—
Science	—	—	—	9	—
Foreign Language	—	—	3	7	—
English	—	2	27	30	—
Spelling	—	1	4	3	—
Social Studies	—	—	1	4	—
Other	—	—	1	5	—
Totals		16	103	135	

TEST

Subject Area	Standardized	Publisher Supplied	Teacher Constructed	Other
Math	69	58	63	8
Science	4	2	7	—
Foreign Language	2	3	5	1
English	20	24	21	7
Spelling	5	1	7	1
Social Studies	2	—	7	—
Other	1	3	3	2
Totals	104	93	114	19

TABLE IV (concluded)

OVERALL EFFICIENCY

Subject Area	*Useless*		*Adequate*		*Extremely Worthwhile*
Math	—	8	51	52	28
Science	—	—	—	6	2
Foreign Language	—	1	4	2	3
English	—	3	21	16	12
Spelling	—	3	4	2	1
Social Studies	—	1	—	4	1
Other	—	—	3	—	3
Totals		16	85	83	51

ENROLLMENT

Subject Area	*0-499*	*500-999*	*1,000-4,999*	*5,000+*
Math	36	21	53	55
Science	—	1	4	4
Foreign Language	—	3	3	5
English	7	6	23	23
Spelling	—	1	5	5
Social Studies	—	—	3	4
Other	2	—	4	1
Totals	45	33	99	97

APPENDIX C

TABLES OF SIGNIFICANCE

Initial Source	*# Non-Users (of 1671)*	*# Users (of 209)*	*Chi Square*	*Probability*
Newspapers & Magazines	526	34	20.5	< .001
Professional Publications	1274	150	2.0	Not Significant
Colleagues	206	48	> 17.9	< .001
Laymen	17	2	0.1	Not Significant
Salesmen	298	18	> 11.3	< .001

PUBLICATION

Read Two Issues	*# Non-Users*	*# Users*	*Chi Square*	*Probability*
A.V.I.	578	113	> 30.3	< .001
AID	102	42	> 51.9	< .001
ATB	106	53	> 86.7	< .001
P.I.	404	125	> 111.6	< .001
J. Ed. Psy.	245	69	> 44.9	< .001
Galanter	51	30	54.8	< .001
L. & G.	255	113	> 336.6	< .001
Cram	125	40	> 31.5	< .001
Stolurow	57	15	> 6.2	< .05
Markle	51	40	> 104.4	< .001

PLANNED PURPOSE

	# Non-Users	*# Users*	*Chi Square*	*Probability*
Remedial	482	114	> 54.2	< .001
Regular Instruction	332	142	> 217.9	< .001
Enrichment	568	125	> 50.9	< .001

PLANNED FUNDING

	# Non-Users	*# Users*	*Chi Square*	*Probability*
Regular Budget	1129	187	> 40.6	< .001
Extra Local Funds	44	6	0.0	Not Significant
State	39	6	0.1	Not Significant
Federal	94	18	3.0	Not Significant

APPENDIX C (continued)

STEPS PLANNED

	# Non-Users	# Users	Chi Square	Probability
System Conference	136	16	< .5	Not Significant
School Meeting	137	13	<.1	Not Significant
Planning Group	315	36	.32	Not Significant
Program Director	34	6	.3	Not Significant
Staff to Workshop	198	46	> 17.0	<.001
Consultant	306	57	> 9.6	<.01
Obtain Samples	591	90	> 5.2	<.05
Inform Lay Groups	230	66	> 44.4	<.001

STEPS TAKEN

	# Non-Users	# Users	Chi Square	Probability
System Conference	157	46	> 30.7	<.001
School Meeting	218	52	> 21.1	<.001
Planning Group	98	67	> 152.4	<.001
Program Director	21	18	> 45.9	<.001
Staff to Workshop	224	68	> 54.1	<.001
Consultant	180	71	> 82.7	<.001
Obtain Samples	580	171	> 16.45	<.001
Inform Lay Groups	137	99	> 248.5	<.001

U. S. GOVERNMENT PRINTING OFFICE : 1963 O - 683161